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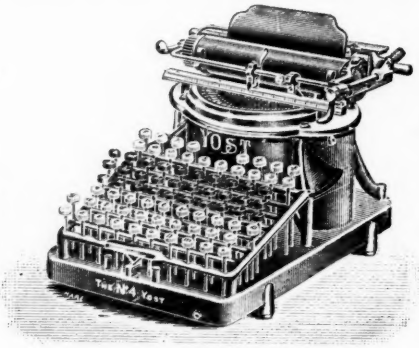

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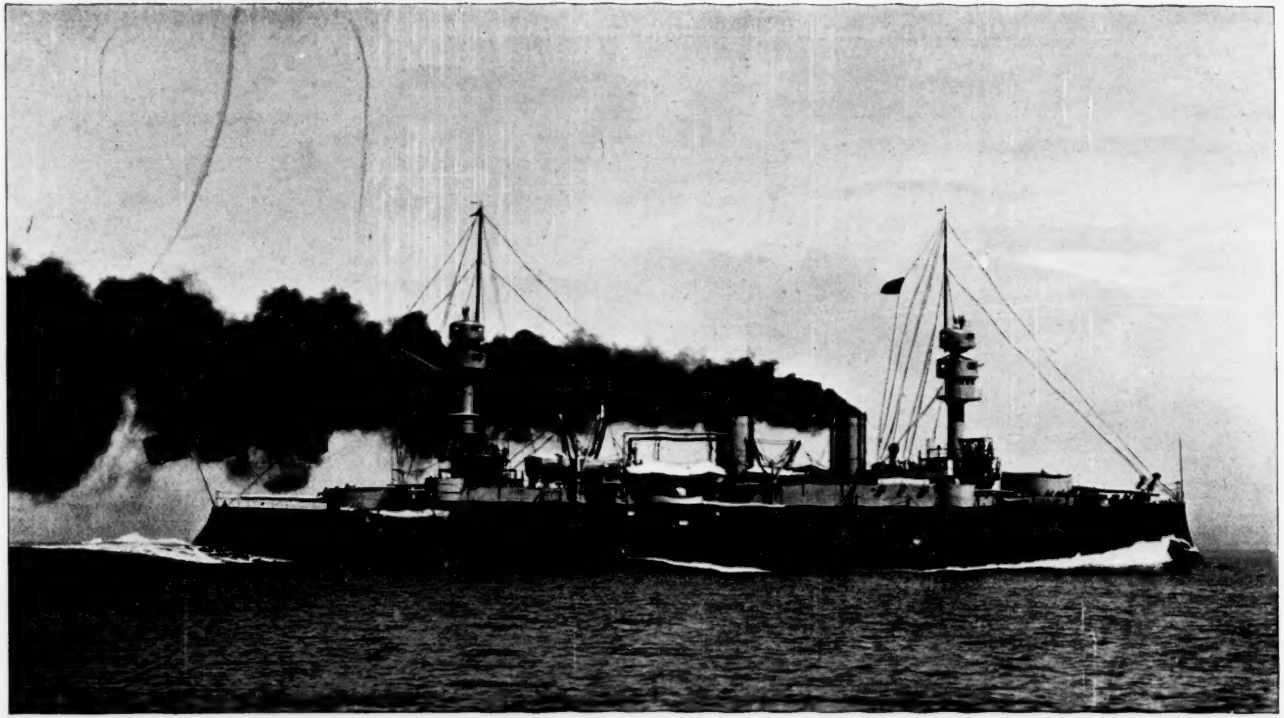

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See Page 1,386.

The new French First-class Battle-ship "JAURÉGUIBERRY," 11,824 tons, 14,200 I.H.P.

From an instantaneous photograph by M. Bar. Toulon, the Ship steaming 18 knots.

THE JOURNAL
OF THE
ROYAL UNITED SERVICE INSTITUTION.

VOL. XL. NOVEMBER, 1896. No. 225.

[*Authors alone are responsible for the contents of their respective Papers.*]

AN APPARATUS FOR PROVIDING A STEADY PLATFORM AT SEA FOR SEARCH-LIGHTS, ETC.

By BEAUCHAMP TOWER, Esq., M.I.C.E.

Wednesday, April 29th, 1896.
Admiral H. BOYS in the Chair.

I HAVE found that many intelligent people, when considering this subject for the first time, have, at first sight of the problem, suggested that this object may be attained without difficulty by hanging the object to be steadied in gimbals and attaching a good heavy weight underneath, the action of gravity on which will keep the whole thing upright; and they point to the bowl of the mariner's compass, or to the swing table commonly used on board yachts, as examples of objects steadied by this means. As there may be some such persons among my audience, I will begin by a few words on the fallacy that a pendulum hangs perpendicular on board a ship in a seaway. To begin with, the swing table and the mariner's compass do not maintain a constant attitude with the horizon in a seaway, as looking along the top edge of either at the horizon will prove. A ship itself is a pendulum kept upright in still water by its centre of gravity being below its virtual point of suspension, and if a pendulum would keep upright in waves so would the ship, and there would be no need for any such contrivances as I am going to describe to-night. "But surely a pendulum will hang perpendicular in obedience to gravity," they will say, to which I reply that equally surely will the surface of water be horizontal in obedience to the same law; and both of these assertions are true so long as the pendulum and the water are acted on by gravity alone. We have only, however, to look at, or feel, the surface of a rough sea to be convinced that the surface of water may depart most grievously from the horizontal when acted on by other forces besides gravity, and

I do not see why we should expect a plumb-line to hang perpendicular under circumstances when the surface of water will not remain horizontal. The particles of water in a wave sway backwards and forwards in a horizontal plane, as well as upwards and downwards; and this horizontal motion introduces forces which, compounded with gravity, give a false level, which departs from the true level as much as the slope of the wave does. The late Mr. William Froude, in a paper on "The Rolling of Ships," read before the Institution of Naval Architects in 1861, describes the following experiment which he tried:—He took an ordinary ring life-buoy, and on it he erected a tripod, from which he suspended a plummet. When this was floated on waves, he observed that the plumb-line hung perpendicular to the wave slope under all conditions, even in the extreme case of a curling-over wave breaking on a beach. In short, he found that a plumb-line afloat on waves departs as much from the vertical as the surface of the wave does from the horizontal, and cannot, therefore, be depended on, under those conditions, as an index of the true perpendicular. I will now go on to describe an apparatus which gives absolutely perfect steadiness to search-lights, machine guns, or other objects, even on a small, quickly-rolling vessel in a very rough sea.

A search-light projector throws a narrow ray of light not much more than a degree wide; and, in order that it may be of use for detecting the approach of torpedo-boats or other objects at night, it must be held so steady as to have no angular motion in a vertical plane comparable with the angle subtended by the ray of light, or it is impossible to keep the object in the field of illumination.

In this apparatus the platform (see Figs. 1, 2, and 3), or part to be kept steady, and to which the search-light is attached, is hung in gimbals, so as to have angular freedom in every direction, in the same manner as the bowl of a mariner's compass. The gimbals are supported on a turntable which runs on wheels on the top edge of a tank or pedestal, so that the light may be trained to any point of the horizon. At each of the four corners of the platform is fixed a cylinder, *k*, having a ram or plunger projecting upwards out of it, connected by a rod with a point, *e*, fixed relatively to the ship. If one of the rams is forced out of its cylinder by water-pressure, it will cant the corner of the platform to which it belongs downwards in the gimbals, so that, by regulating the admission of water-pressure to the four cylinders, the attitude of the platform in the gimbals can be controlled. This is done by the gyroscope, *g* (Fig. 4), which is a heavy wheel revolving in a horizontal plane on a ball-and-socket bearing, *b*, supported on the centre of a cross-shaped frame which connects the bottoms of the four cylinders. The bodies of these cylinders project downwards from the platform, and are connected together by plates in such a way as to form a square cell within which the gyroscope revolves. The ball-and-socket bearing allows the gyroscope freedom to wobble or depart from the horizontal plane in every direction through an angle of about 3°.

A supply of sea water at the rate of 50 gallons per minute, and having a pressure of 100 lbs. per square inch, is pumped by a donkey-

engine to the platform, which it reaches by passing through the interior of the gimbal ring. This is made hollow for the purpose, and is provided with water-tight oscillating joints in its bearings. The water can thus pass without leakage through the moving parts of the gimbals to the platform, and is conducted by pipes, *p* (Fig. 3), to the ball-and-socket bearing of the gyroscope, which is made hollow so as to provide a passage for the water into a chamber, *c*, in the interior of the gyroscope. From this chamber passes two radial passages, *r*, *r*, to the outside rim of the gyroscope, where they terminate in tangential jets, *t*, *t*. These two jets are each $\frac{3}{16}$-inch in diameter, and by their re-action cause the gyroscope to rotate at about 1,500 revolutions per minute. About one-third of all the water escapes through these tangential jets, and is used in giving the gyroscope rotation. The remaining two-thirds pass upwards from the chamber, and issue from a jet, *a*, $\frac{3}{8}$-inch diameter, which forms a prolongation of the upper axis of the gyroscope. It is this axial jet which provides the motive force for the controlling cylinders, *k*, *k*, of the platform.

The centre of the ball-and-socket bearing is situated about the centre of gravity of the gyroscope, so that, without any extraneous force being brought to bear on it, the gyroscope might continue to revolve in any plane within the limits of wobbling freedom. In order to make the gyroscope seek to revolve in a horizontal plane, four small pendulums are hung outside it (see *x*, Figs. 4 and 5). Each of these pendulums has a horizontal arm projecting from it, on the end of each there is a small wheel, *w*, which rests and presses lightly on the upper rim of the gyroscope. If the gyroscope is revolving in a horizontal plane, all these pendulums press on it equally with their horizontal arms ; but should the gyroscope be out of the horizontal plane, then one pendulum presses more and one less hard, in such a way as to cause it to seek the horizontal plane. Of course, these pendulums are subject to the disturbing forces of the wave motion, as all pendulums are on board ship, and consequently do not tend to hang truly perpendicular to the horizon during the passage of a wave; but the gyroscope yields too slowly to the unequal pressure of the pendulums to take notice of these disturbances, which last only during the passage of a wave. Its position is that due to the mean of all the forces acting on the pendulums during a long period of time, which mean is the true perpendicular force of gravity.

We thus have a gyroscope revolving in a horizontal plane and throwing a truly vertical jet out of the axial jet nozzle. The directing of this jet in the true vertical is the sole business of the gyroscope and the only object of its existence.

Immediately above the axial jet, and about half-an-inch from it, are four open-mouthed ports, *o*, *o* (Figs. 4, 6, 7), formed in a circle, divided by radial divisions into four equal sectors ; their open mouths are directed downwards towards the axial jet. The passages, of which they form the terminations, communicate each to one of the four cylinders.

If the platform is truly horizontal, the axis of the axial jet passes through the centre of the circle containing the four ports, and the jet is equally distributed between them ; but should the platform be the least bit

out of the horizontal plane, some of the ports receive more of the jet than others, and this causes an inequality of pressure in the cylinders which cants the platform into the horizontal plane. Thus the vertical axial jet playing on the four ports acts as a force tending to keep the ports and itself concentric, and consequently the platform horizontal. The reason for using the jet as a connection between the gyroscope and platform is that it enables the gyroscope to powerfully control the platform, and yet suffer no re-action on itself. A very small force would be sufficient to disturb the gyroscope from its horizontal plane of rotation, but no force can be communicated to it from the platform, as it makes no difference to the gyroscope what the axial jet strikes against after it has left the nozzle.

The water from the jets, after expending its energy in the manner described, falls past the gyroscope through the open bottom of the cell into the tank below, and thence through a pipe returns to the sea.

It will be observed that, in the apparatus as above described, a disturbing force acting on the platform, such, for instance, as a strong wind blowing against the projector, would actually cause a departure from the true horizontal, by the amount of the angle necessary to cause the jet to cover one port and uncover another sufficiently to establish the difference of pressure in the cylinders capable of withstanding the disturbing force. (See Fig. 6.) The same kind of error also is caused by the angular speed of the ship's rolling, as then one pair of cylinders is filling with water and the other pair emptying, and this also requires a departure from concentricity between the ports and jet. This error, due to either or both of the above causes, might, in extreme cases, amount to nearly 2°, and it is to remove it that the correcting cylinder has been introduced.

The open-mouthed ports, against which the axial jet plays, have been described as formed by a circle divided into four equal quadrants by four radial divisions at right angles one to another, each quadrant being a port. Two of these radial divisions lie in the vertical plane in which the search-light is directed, the others being at right angles to it. The former plane is the only one in which absolute accuracy is required. The radial divisions lying in it are made double, so as to include a narrow slit between the double partitions; this slit is divided in two at the centre (see ports, Fig. 7), so that, in addition to the four main ports *o*, *o*, *o*, *o*, we have two small ports, *s*, *s*, in the shape of narrow slits in two of the partitions.

Under the elevating screw of the projector is a small cylinder, *d* (Figs. 1, 3, 7), called the correcting cylinder, having a piston and piston rod, to the end of which the elevating screw is jointed. The piston is kept at mid-stroke in the cylinder by a stiff spring, *f*. Each end of this cylinder is connected by a pipe to one of the narrow slit ports. Now when, owing either to a disturbing force acting on the platform, or to speed of rolling, the above-mentioned error occurs, the departure of the centre of the jet from the centre of the ports covers one and uncovers the other of the narrow slit ports, *s*, *s*, and thus causes a difference of

pressure in them, and in the two ends of the correcting cylinder, and a consequent departure from mid-stroke of its piston in proportion to the distance of the centre of the jet from the centre of the ports, which is the error. (See Fig. 7.) The strength of the spring is proportioned to the area of the piston, so that the travel of the piston gives angular motion to the projector in its bearings in the opposite direction, and to an amount equal to the error, so that it is exactly compensated for, and absolute steadiness obtained under all conditions.

The first practical machine was fitted up on a small steam yacht 50 feet long and 11 feet beam, and subjected to a laborious course of experiment, extending over about two years. It was experimented with by the officers of H.M.S. "Vernon" as a means of mounting search-lights, and by the officers of H.M.S. "Excellent" as a means of mounting machine guns. In both cases their reports showed that the machine answered the purpose for which it was designed perfectly, and I believe, so far as I am permitted to know, that their opinions were favourable. After these experiments, a machine for mounting a 24-inch search-light projector was ordered by the Admiralty to be fitted to H.M. gun-boat "Bloodhound," tender to H.M.S. "Vernon," for further experiment, which showed that the machine could be depended on to keep a search-light ray absolutely steady on a small vessel in a heavy sea, and I believe that further favourable reports were sent to the Admiralty on the subject. Since then, Sir W. G. Armstrong, Mitchell and Co. have taken up the manufacture of these machines, and are fitting it to the torpedo destroyers "Swordfish" and "Spitfire," which they are constructing for the Navy. They are also supplying these machines to the order of the Chilian Government for a cruiser building at Elswick. There would be no difficulty in mounting the smaller class of Q.F. guns on these machines, of course specially designed for the purpose; and on a small vessel, in which the motion is very quick and the difficulties of accurate shooting great, it ought to be very effective. For larger guns, an automatic firing apparatus has been designed for attachment to this machine, so as to fire the gun electrically at the right moment in the roll.

There is, however, a more humane purpose to which this machine may and probably will some day be applied, and that is the relief of the sufferer from sea-sickness. On the machine which was mounted on the yacht, a seat was provided on which a person could sit and observe the steadiness by looking along sights at the horizon. The sensation of steadiness while seeing the ship rolling and pitching about under one was a curious one, and many people who tried it exclaimed that here, at last, was an alleviation, if not a perfect remedy, for sea-sickness. It is true that the rising and falling motion is still there, but this can, to a great extent, be avoided by taking a position somewhere about midway between the bow and stern. But the angular motion of pitching and rolling is equally great in all parts of the ship, and can be escaped only by some such contrivance as I have described. A small cabin kept steady by an apparatus of this kind could be fitted on the Channel steamers, for seats in which many people would be glad to pay a high price on a rough day.

Mr. J. I. THORNYCROFT, M.I.C.E.: It gives me great pleasure to say a few words on the subject before us, because I have had the advantage of both being steadied by the machine and of seeing its effect on the search-light. Mr. Tower having placed his vessel where it rolled rapidly through a considerable angle, I then got on to the platform of the apparatus which had been made for steadying a gun, and sitting on this platform I saw the vessel rolling about under me, and by observing the horizon from the sighted wooden gun on this occasion I could see the angle of motion of the platform was very small, in fact it was so small that you actually felt no motion; and I quite agree with Mr. Tower that to many people there would be a great sense of comfort, I believe, from reducing the motion to one of simple vertical oscillation. With regard to the use of this apparatus for steadying search-lights, I saw the effect of the apparatus at a distance. It was rough weather, but the beam of light remained for a time quite steadily. I could corroborate what Mr. Tower has told us, that the angle of motion through which the ray moved, due to the waves, was certainly limited below that due to the angle subtended by the light from the lantern. The vessel was at a distance of some miles. The vertical motion of the light was almost *nil*; then there would be a change, when no doubt the apparatus was purposely thrown out of gear, when the ray of light disappeared up into the sky, and suddenly swung down and shone into the sea and apparently was illuminating the gulf below, but certainly there was no light visible. Then you would see the light suddenly sweep round like the ray from a revolving lighthouse, and in this case the motion of the light was changed. Now I would like to say a few words about the structure Mr. Tower has designed. I must say Mr. Tower has attacked a most difficult problem, and he has given us an exceedingly simple solution of the problem before him. I think we may congratulate Mr. Tower on attaining a very perfect solution of this most difficult problem. We are all indebted to him for the great pains he has taken with this apparatus, and I think it is unfortunate that it has taken so long before the apparatus has been more used in the Service, as I think it should be. I would like to make an allusion in a popular manner to my idea of the result of this apparatus on the gun. It seems to me that Mr. Tower has reduced the flight of a snipe to that of a partridge. Sailors tell us that as a ship rolls they can just fire at the right time and always hit the mark; but I think if the advancing object is coming in a zigzag line the task is certainly more complicated than when you have motion in one straight line. To hit an object uniformly moving is quite difficult enough, and I think really for Q.F. guns this apparatus ought to be of great service. I think we must all thank Mr. Tower for bringing this matter before the Institution.

Mr. H. BRUNEL, M.I.C.E.: I am very glad Mr. Thornycroft is here, otherwise I am afraid I should have been the only person present, except Mr. Tower, who had sat on this apparatus. Mr. Froude is not here, and Mr. Mallock is not here. My experience was in the very early part of 1889, before the correcting cylinder was put on. I went out, Mr. Edmund Froude was with me, and we were taken out between the Warner and the Nab, where we got fairly rough-water weather. The boat rolled through an outside angle of 20° or 30°. I sat on the machine and looked along the gun-sight of a wooden gun; the machine was designed to take a 3-pounder gun. The utmost error either myself or Mr. Froude detected then was about half a degree. That came on very gradually, and it would have been corrected; it was not a sudden phenomenon occurring at each roll. The error which happened at each roll was a good bit less than that—under a quarter of a degree, I should have thought. I had experience of the instrument afterwards. In the autumn of 1889, I spent a week with Mr. Tower at Yarmouth, Isle of Wight, and went out several times to the Needles, where you can get a rough sea on a shallow where the tide runs heavily. I saw it (the machine) at work, and consider it is a thoroughly practical instrument. That was the time when Mr. Tower was devising the correcting cylinder. I have never been on the

machine since the correcting cylinder was applied. On the occasion to which Mr. Thornycroft refers, the correcting cylinder was, I believe, at work on the "Bloodhound." Mr. Tower was not there, and I think he can tell you the machine was entirely in the hands of people who had never had anything to do with it before. The correcting cylinder is a thorough success. The "Bloodhound" experiments have proved that the instrument will answer for search-lights. I think it is a pity that the enquiry as to the suitability of it to gunnery purposes has not gone forward at the same time. With regard to sea-sickness, I quite agree with what has been said. Sitting on the machine in this rough sea off the Nab, one felt a great feeling of indifference as to the effect of the motion.

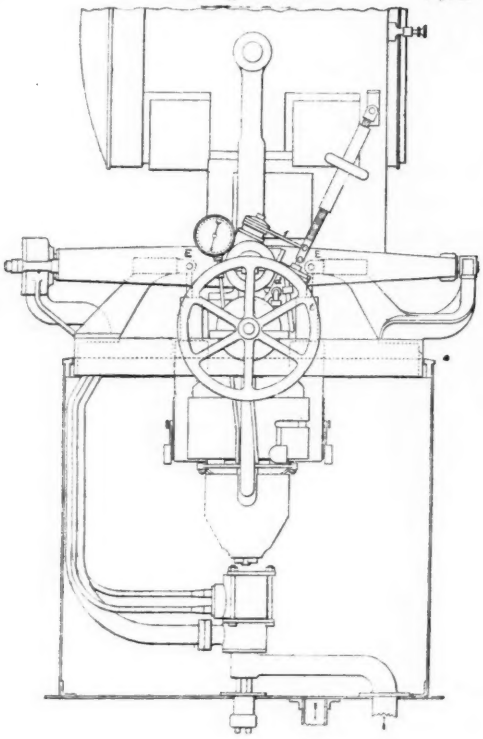
Mr. BEAUCHAMP TOWER: It has been suggested that the error which the correcting cylinder was introduced to remedy, might have been prevented by making a more powerful jet. When I first began experimenting with the apparatus, I had a small model, very much smaller than this, and my apprehension of this error was one of the things I had in my mind. In order to make it as small as possible I thought the right thing would be to make the axial jet very long, so that a very small angle would cause a great travel of the jet over the ports, and so I should have a very small error. The consequence was when I first tried it, instead of remaining steady, it kicked about in the most furious way. No doubt Mr. Thornycroft is perfectly familiar with a phenomenon found in steam engine governors called "hunting," which is an oscillation caused by making the governor too sensitive, the result being a periodic variation of speed above and below the mean speed; this is cured by making the governor less sensitive. In this machine I found it necessary to have a certain amount of lagging behind error to prevent this oscillation; and I am, therefore, obliged to have a correcting cylinder to correct it. Mr. Thornycroft referred to what he saw of the experiment on the "Bloodhound." The apparatus was fitted under my own superintendence on the "Bloodhound" in the spring of 1892, and I left it at the beginning of June. I had no opportunity of trying it at sea, and was prevented by illness from attending the trials which the captain of the "Vernon" carried out with it in the autumn when, although it had been standing three or four months without any attention, and was not in charge of anyone who had had any experience of its working, yet the apparatus worked perfectly well, which, I think, shows that it does not require any special nursing. Mr. Brunel said that when he was on the machine he observed a small error, some half a degree or something of that sort; but that, of course, was before the introduction of the correcting cylinder. Mr. Thornycroft has told me that when he was observing the trial of the "Bloodhound" from the shore he saw at times a slight tremble, or quiver of the beam. The cause of that has been since ascertained and completely removed. We have had a search-light mounted on the machine on a steam launch in the Tyne off Armstrong's yard, which was rolled tremendously by men running across it, and at the same time the ray from the search-light was directed against the side of a vessel lying some distance out in the stream, and the spot of light on the side of the vessel was absolutely stationary. We might have had the magic lantern which we have here mounted on it, and it would have thrown the diagrams on to the screen just as steadily as you have seen them to-day, in spite of the most violent and rapid rolling of the launch. I will conclude by thanking you for your kind attention and remarks.

The CHAIRMAN (Admiral Boys): It is difficult for a naval officer, not an expert, to follow the description from drawings of the valuable apparatus which the lecturer has brought before us to-day, and the experiments that Mr. Thornycroft and Mr. Brunel have told us of. Mr. Brunel and I were associated together some years ago with the late Mr. Froude in the "Ant," a gun-boat, in something of the same sort of experimental work; then it was for measuring the height of waves. When I read the paper, and I was quite innocent as to any previous knowledge of it, my doubt was that it would take so long a time for the action of this apparatus to operate, while the ship was rolling quickly, that it would not come

into play in time to correct the horizontal motion of the platform. But, as it appears, experiments have proved satisfactory in that respect, I must accept the statement. I am sorry that the gentlemen to whom Mr. Brunel has referred are not here to-day, but, having held the position that some of them hold, I know the duties are so onerous that they cannot spare time to attend the lectures in this Institution. I may add that it seems to me the great value of this apparatus would be in the attack of torpedo-boats on ships. An attack by torpedo-boats at night occupies seconds, hardly minutes, and the difficulty is to discover them with the search-light and bring machine guns to bear upon them in time. This apparatus, it appears to me, is the very thing that is wanted; it keeps search-lights and machine guns always bearing on the horizontal plane to pick up torpedo-boats as they approach. I am sure you will give me permission to thank Mr. Tower for his very able lecture and explanations, and I do so with much pleasure.

GENERAL ARRANGEMENT.

Scale $\frac{1}{16}$ Full Size. *Fig. 1.*



PLATFORM.

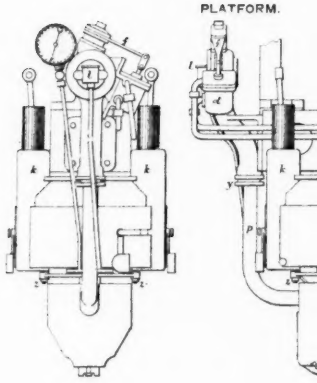
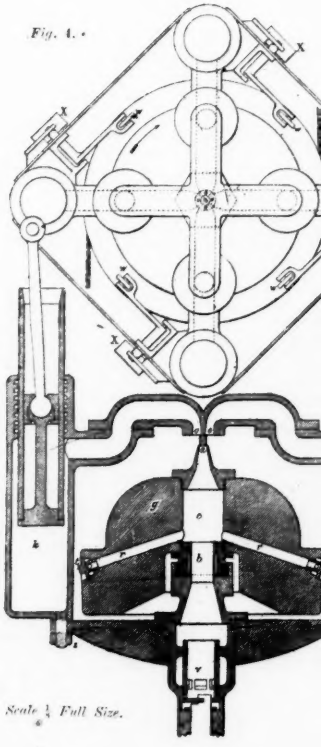
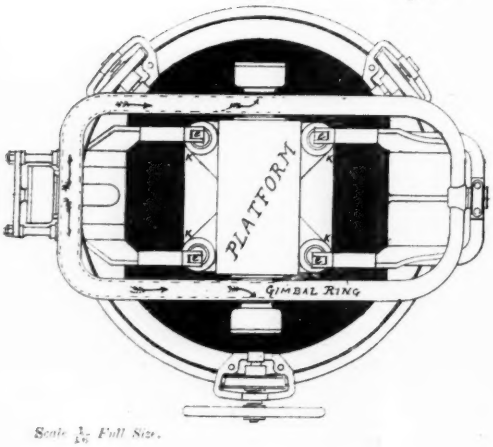


Fig. 4.



Scale $\frac{1}{6}$ Full Size.

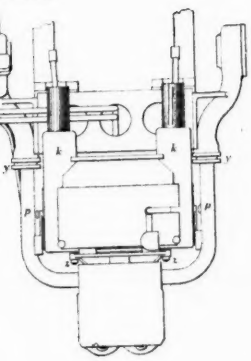
PLAN. *Fig. 2.*



Scale $\frac{1}{16}$ Full Size.

TFORM.

Fig. 3.



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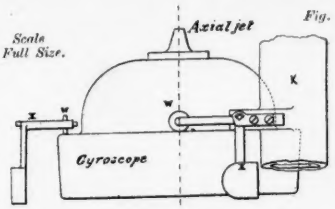
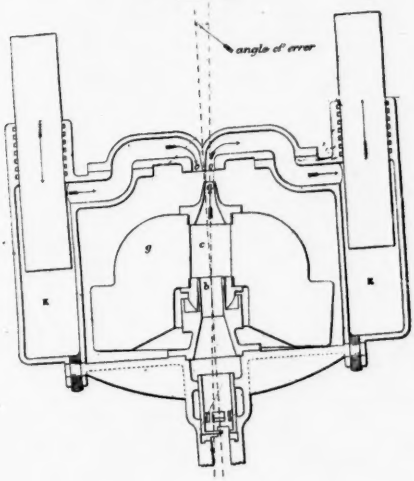
Axial jet

Fig. 5.



Direction of Roll or of Wind

Fig. 6.



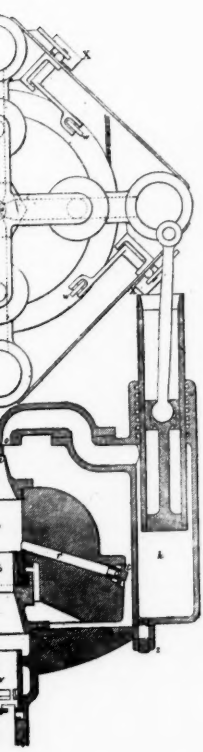
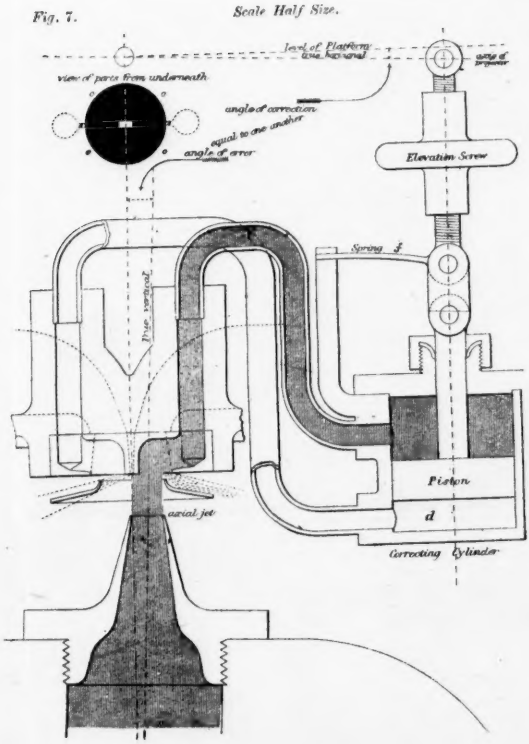


Fig. 7.

Scale Half Size.



THE DEARTH OF OFFICERS IN THE VOLUNTEER FORCE.

By Colonel W. J. ALT, Commanding 22nd Middlesex Rifle Volunteers (Central London Rangers).

Friday, May 8th, 1896.

Field-Marshal Sir J. LINTORN A. SIMMONS, G.C.B., G.C.M.G., R.E., in the Chair.

The CHAIRMAN: I have been asked to preside this afternoon at a lecture to be given by Colonel Alt, an officer of long service in the Volunteer forces, and well known for his work in those forces. I had an opportunity of reading the paper yesterday morning, but cannot say that I agree with it in its details; but the subject is such an interesting one that I trust we shall have a useful discussion which may be productive of good results.

Colonel W. J. ALT: I have received several letters from commanding officers expressing their interest in the subject of this paper. One says it is very important; another that it is vital; another that it is a very important subject, but difficult to solve; one gentleman regrets his inability to attend and take part in the discussion of a subject very near to his heart; while another speaks of the courageous attempt to put matters on a better footing, and hopes that it will lead to something being done.

LECTURE.

MUCH has been and is being written and said on the subject of the difficulty of maintaining the established strength of officers in the Volunteer force, and of keeping up a healthy flow of new appointments in their ranks; and much more might be said if those who know the difficulties had the courage or opportunity to speak out publicly and boldly. The difficulty is a growing one, as evidenced by the War Office Returns, which show that the Force was short of 1,907 officers for the year 1895 as compared with 1,841 for 1894, indicating that, unless effective steps are taken without delay to remedy the evil, the time may soon arrive when a dry-rot will set in and undermine the apparent vitality of the Force.

I purposely use a strong simile in speaking of the result to be expected from this loss of officers, because it is, or ought to be, generally known that it is to the untiring efforts of the gentlemen composing the commissioned ranks, through good report and evil report, and in the face of great recognised and still greater unrecognised difficulties, that the Force has been kept together since the first wave of enthusiasm which brought it into existence subsided. In an article in the *National Review* for March by Lord Kingsburgh, entitled "Volunteers," that experienced commanding

officer deals at some length with the dearth of officers as a matter, he says, "of such paramount importance that it may be singled out for emphatic recommendation and even entreaty." He asks if it is "anything else than a disgrace that in a city like Edinburgh, with a large resident population of position and wealth, there should not be in the five battalions of his brigade one single officer whose time is his own." He courageously describes the position of those officers, every single one of whom is engaged in business, and whose Volunteer work has to be taken out of his well-earned hours of leisure, and upon many of whom the provision of uniform and other expenses are heavy drains upon purses not over-well filled; and he "earnestly appeals to society for help to remedy the weak spot in our present condition." He repeats the oft-made statement that "officers must join before the time of need, so that they may be trained and equipped for the hour of danger"; and that "the well-trained officer is a paramount necessity." In concluding his article he quotes expressions of the Commander-in-Chief as to the valuable influence the work of Volunteers has had upon the reform and progress of the Regular Army; and takes encouragement from those remarks.

In a leading article upon the Army Estimates in the *Times* of March 10th are these words:—"The Volunteers, also, do not reach their established numbers, and there is a very serious dearth of officers, which, taken in conjunction with the comparative inefficiency of those now serving, must materially affect the value of these Auxiliaries."

There is an article in the *Nineteenth Century* magazine for March by that well-known military critic, Colonel Lonsdale Hale, entitled "An Army without Leaders," in which he fearlessly exposes our shortcomings; and in the column on "Military Matters" in the *Globe* of February 29th there was this paragraph:—"Our danger seems to lie in the fact that the ordinary public live in a fool's paradise, fancying that the Volunteer force is available for general military purposes, and in this manner it has acquired an importance quite disproportionate to its real value"; and in the preface to the 1894 edition of Mr. Spenser Wilkinson's book, "Citizen Soldiers," he says:—"The officers upon whom everything depends are little better able to lead their troops in a campaign than they were ten years ago. Discipline varies according to the character of commanding officers, and is nowhere remarkable for its excellence. In the event of a naval mishap the fate of England would rest upon the fighting value of the Volunteers; that is, in the main, upon the character and the tactical attainments of the Volunteer officers, whom the War Office" (according to Mr. Wilkinson) "has neglected and has befooled with decorations in lieu of the instruction and the responsibility they needed." On the occasion of the lecture lately given in this theatre by Colonel Balfour upon "The Tactical Training of Officers of Volunteers," Colonel H. Bethune Patton, commanding the Severn Brigade, and an experienced commanding officer of Volunteers, while testifying, as I do, to the soundness at the core of the Force and of the earnest wish of officers to make themselves efficient, expressed himself in a remarkable manner in regard to them. He said:—"The greatest necessity of the Volunteer force

at present is that the senior officers should all be able to handle their men in the field in such a way as to get on without their adjutants," and that "the country wants a guarantee that the officers, at any rate the senior officers" (why the senior officers only?), "shall be capable leaders of the magnificent men they have the honour of commanding. That the Volunteers are what the officers make them, and the officers are *what their country makes them*."

Again, in a lecture on "The Volunteer of To-day," given in this theatre in February by Major Rickards, of the London Rifle Brigade, he used these words:—"I admit frankly I have often asked myself, as captain of a company, Would Volunteers do what they knew to be unpleasant, and thought to be unreasonable, when, as in the case of invasion would assuredly occur, they were tired out with marching, exhausted with want of food, and convinced that their captain or his superior officers were making blunders? I cannot altogether answer this. I think it would very largely depend on whether their officer had a personal hold over them."

In an article in the *Daily Telegraph* of the 9th January last the question of the dearth of officers is dealt with, the seriousness of which is attempted to be diminished by showing that the Force is also short of its establishment of men. It is hardly necessary to point out the weakness of this contention, which must mean that if companies are weak fewer officers are needed to command them. Thus, 200 battalions may be short of 20 colonels, 40 majors, 160 captains, 320 subalterns, and so on; logically it would follow that twenty battalions should be disbanded, and the officers and men distributed among the remaining 180 battalions, and so bring up their established strength. No, the only safe policy is to maintain the cadres of all existing battalions with their full complement of officers, and to keep up their organisation in readiness for the filling up of the ranks, which would certainly take place in the event of a threatened invasion.

The Press and the military authorities vie with each other in demanding increased efficiency conditions; at the same time the shrinkage of officers continues.

Foreign Powers must be aware of our weakness in respect to officers, for their military attachés must have taken note of and reported it. In the Franco-German War it is admitted that one great contributory cause of the crushing defeat of our great neighbour was the inefficiency of officers and their lack of discipline. Is there not, therefore, ample reason for setting this part of our military house in order?

It is needless to quote further authorities; sufficient evidence has surely been adduced to justify us in thinking that the subject is one of the most serious which can occupy the attention of the military authorities in connection with the maintenance of a Force upon which the country largely relies in the hour of national danger.

The dearth of officers, and consequent impossibility of putting pressure on them, has a lowering effect upon the energies of commanding officers, who feel the helplessness, under existing conditions, of making all their officers what they ought to be.

We were lately rudely awakened to the fact that we might be suddenly called upon to put forth our military as well as naval strength in more than one part of the world; and the present moment is an opportune one to press upon the authorities the absolute necessity of a reform in the methods hitherto adopted for obtaining officers of Volunteers. The question should, however, be grappled boldly, and not tinkered with. Tinkering an old pot is bad enough, but should never be tried with a military weapon. Hitherto, we have been patching up the sides of the vessel, while a big hole remains in the bottom. The tinkering process is, I think, going out of fashion. The public of this great Empire will no longer be content with half measures, which are always more costly in the long run than whole ones; and we shall be well serving the interests of the Army to which we are devoted, and of the Empire of which we are proud, by calling public attention by every means in our power to our recognised weaknesses. By doing so, moreover, we strengthen the hands of the Ministers in office in dealing effectually with them.

I take it for granted that all reasonable thinkers capable, from their knowledge and experience of the Force, of judging, admit that our weaknesses are many, and that the greatest of them is the lack of capable leaders. I do not agree with some of Colonel Hale's conclusions, in his article to which I have alluded; in particular as to "infusing into the Force that reliable, invaluable military spirit which the presence of Regular, professional officers bred up, nurtured, and nourished to maturity as professional soldiers can alone secure." Regular officers, with very few exceptions, when nourished to maturity, have not been successful when transferred to Volunteer battalions; and to attempt to introduce them wholesale into the Force would entirely change its character, and would, in my humble opinion, ring its death-knell. So long as we are constituted as at present, we must preserve the business capacity and experience, the innate love of soldiering, which characterises so large a percentage of our officers, and the wealth and position which many of them possess; but means must be found to increase the supply of gentlemen possessing such qualifications, so as to enable their chiefs in command to put on the necessary pressure to give them the qualities which Colonel Hale expresses in the words of his which I have quoted.

It was pertinently remarked by Major-General Sir Francis Grenfell at Colonel Balfour's lecture, already alluded to, "that we should first catch our officers"; and there can be no doubt that a condition precedent to any scheme of higher instruction must be the filling up of our ranks and the establishment of an anxious waiting list of candidates for the honour of the Queen's commission in our branch of the Service. Surely it is highly derogatory to the country that such a commission should go a-begging, and that it should be necessary to hunt for candidates and catch them by representations which, if not actually false, are akin to it by the suppression of the truth as to the requirements now essential to the avoidance of censure from our military chiefs. How few would be the eligible men accepting a commission if the fullest details were given them of what general officers commanding districts and inspecting officers

now require in excess of what is laid down in the "Regulations for the Volunteer Force," "The Volunteer Acts" and "Orders in Council" relating thereto! and is it to be wondered at that the bulk of resignations are from the junior ranks?

The full establishment of officers for the entire Volunteer force of all branches is 9,177; the present deficiency is 1,907, leaving 7,270 serving. Of these, only 1,077 have passed a school of instruction in drill, and only 1,433 have passed a tactical examination. What, then, can be said of the military qualifications of the remainder? There are, undoubtedly, many smart officers among them who, for some reason or other, have not passed a school or qualified in tactics as they would, perhaps, like to do. But of the remainder I speak boldly, and say that 50 per cent. of officers at present serving are more or less inefficient and incapable of leading troops in peace manœuvres, let alone in war. There are many who could be made good soldiers if pressure could be put upon them without driving them out of the Service; but there are many colonels, field officers, and company commanders, who hang on for the sake of an honorary step in rank and the Volunteer Decoration; or, in the case of the two latter, at the urgent prayer of commanding officers not to go until the lower ranks of the battalion are filled up.

To clear the ground, however, for a right appreciation of the question, and to found suggestions for discussion, we should consider—

1. The conditions of service of officers of the Regular Army, and the advantages accruing to them.
2. The conditions of service of officers of the Militia, and the advantages accruing to them.
3. The conditions of service of officers of the Volunteers, and the advantages accruing to them.

1. In the Regular Army an officer receives pay and allowances according to his rank. He is also accorded free quarters and a soldier servant. All sources of military knowledge are free to him. A comfortable and honourable livelihood is assured to him. He is governed and limited in his duties by the Regulations applying to the Service, which cannot be strained by his superior officer to his bewilderment and disadvantage. The raw material (recruits) is supplied him gratis, and he finds every necessary appliance and requirement ready to hand for moulding and working up that material into a perfect fighting machine.

He may join the Indian Staff Corps, or, if in any way talented, he can enter the Staff College and get a *p.s.c.* to his name, and in either case a career full of brilliant promise is open to him. The goal to which he aspires is the highest in the Service, and the honour and glory are limited only by events in which the future is always rich. One sighs with envy when thinking of his advantages, and wonders why there should ever be a bad or inefficient Regular officer.

2. In the Militia pay and allowances and free quarters, which are practically the same as those for Regular officers, are given for the time officers do duty. A large number of commissions in the Line are annually offered to subalterns, by which means the avenue to military honours and

success is open to them. Many brilliant officers now serving commenced their career in Militia regiments, and will, doubtless, in time attain the apex of their hopes. For the senior officers of the Force there are opportunities of distinction which are closed to Volunteers. In any case the Militia officer, whatever his rank, need not put his hand in his pocket to retain his position. Equally as with the Regular officer, the raw material and all necessary appliances and requirements for moulding it are found for him, and a further great advantage, as compared with the officer of Volunteers, is that his work is limited to a fixed period of one month per annum. Like the Regular officer, he is subject to military law at all times, and is governed and limited in his work by the Regulations applying to his branch of the Service, which likewise cannot be strained by his superior officers to his bewilderment and disadvantage. His battalion follows in direct enumeration that of his territorial regiment. He wears the same uniform and uses the same badges as the Regular officers of that regiment. His battalion carries colours, and he receives the same social honours and almost invariably is addressed in civil life by his military title.

3. In the case of the officer of Volunteers, he receives no pay at any time he is serving. He has to keep himself; his work goes on all the year round—chiefly in the darkest and most inclement days and nights of the winter months. He has to find his own raw material, his own workshops, his own appliances, and all necessary requirements. He cannot choose his weather for drying his bricks (I am using a well-worn simile), straw, of course, is not found, and his thoughts turn to Scripture history, and he reflects that perhaps the task of the Chosen People with unlimited mud and sunshine in abundance was not so hard as his; but he toils on year in and year out; he makes bricks and builds a wall; then at the end of his year's work comes the taskmaster, who prods it and tests it and tries to knock some of it down; compares it with the Government product; assesses its value and gives a promise to pay at six months' date, upon which cash is borrowed from the usurer to continue another year's toil. Chance sometimes favours the brickmaker, the foreman has found some straw, or the inspector is lenient and a word of praise is awarded, which cheers the hopeful hearts of the toilers. The bondage is, however, truly Egyptian, the only redeeming feature of it being that it is purely voluntary, and is self-imposed from motives of the highest patriotism.

Quitting metaphor, the officer of Volunteers has piled upon his shoulders the burden of the entire work in peace of a war department in all its branches. He finds his own barracks, orderly rooms, drill grounds, armouries, and rifle ranges, does his own recruiting, organises his own drill, and his medical, chaplain's, and quartermaster's staffs, and supplies his own clothing, equipment, bands, transport, machine guns, cycles, signallers, and ambulance. He is his own paymaster-general, and finds the money for all this work, until Government inspectors make their reports, when he is censured if the machine he has so created does not work up to an arbitrary standard of smoothness and efficiency far in excess

of what is laid down by regulations as necessary to earn the capitation grant, and he has the further privilege of waiting six months for the dole which is made to him in contribution towards his eighteen months' outlay. The officer of Volunteers has nothing to aspire to. His efforts to distinguish himself are not encouraged; the credit for any reform in drill, military invention, or creation for the improvement of the Service, is absorbed by the officers of the Regular Army. He is kept in leading strings; he has been, and occasionally still is, inspected by Regular officers, whose military acquirements do not always appear to be up to the standard desirable. Staff appointments to Volunteer brigades are still conferred upon company officers of the Regulars, who, at the expense of the officer of Volunteers, learn the work which he could do as well, if not sometimes better. With reference to this, I find by the March Army List that in the thirty-three Volunteer Infantry Brigades there are only six Volunteer Brigade-Majors. There are six company officers of the Regular Service holding those appointments; the remaining twenty-one being held by Regular Field-Officers in the receipt of retired pay and in the Reserve of Officers. The Army he has created provides brigade commands and Staff appointments for a large number of Regular officers, who have thus learnt to handle masses of troops and perform Staff duties, and it is they who gather the fruit raised with so much toil and self-sacrifice by the toiling Volunteer. He is not governed and limited in his duties by the Volunteer Regulations, but by any interpretation which may be put upon them by inspecting officers who may not have studied them, or by any arbitrary standard of efficiency which they may lay down, and which is never alike in any two brigades; and for not coming up to which he is liable to be unjustifiably censured without any redress being open to him.

The Volunteer Regulations require that the rank and file, after completion of recruit training, should attend nine, now increased to twelve, drills per annum; be in possession of a great coat and certain equipment; that two-thirds of the enrolled strength should be present at the annual inspection, or be absent with leave, in which case the absentee must do two extra drills, and that they should perform class firing. Officers are required within a certain time to obtain a school of instruction certificate or pass an examining board in drill; but woe betide the commanding officer whose battalion does not far exceed these modest requirements. I need not dilate further upon the anomalous and ever-shifting standard which is set up for attainment, or allude to the unjust censure which is meted out if it is not reached. Suffice it to say that an unhealthy rivalry is encouraged between battalions which is creative of much heartburning and smothered discontent. I call it an unhealthy rivalry because there are no two battalions in the Force the circumstances or conditions of which are at all alike, and there are no two general officers commanding districts, or no two brigadiers who judge their battalions from the same standpoint. A word with regard to inspections: one battalion will spend money on the employment of drill sergeants of the Guards or Regular regiments to polish their men up in the bayonet drill or other showy performance.

Marching past will be studiously practised, and every effort be made to produce a good appearance and a large percentage present on parade. Another battalion will devote its time to more essential requirements of soldiering, and could beat the former hollow in the work of camp, outposts, attack formation, etc., but cannot get as large a percentage up for inspection as the other. We all know what the inspection reports of the two battalions would be; but Lord Kingsburgh, in his article already alluded to, quotes the words of a distinguished officer, who said in public, regarding inspections, that "Many a battalion which has the best report from the general at an inspection may be one of the most inefficient in the Army."

Is it rank heresy or mutiny for me to speak like this? I trust not. Perhaps it is the first public utterance of the sort which has been made by an officer in my position, and I must take the consequences; but I believe my words will find an echo in the hearts of thousands of keen Volunteer soldiers in whose breasts rankle the strongest feelings of indignation at the neglect and injustice under which we have so long suffered. Are we not, then, loyal to our military superiors? I do not believe there is, as a whole, a better disciplined body of officers in existence, or one more loyal in every respect to all Regular officers placed over them; but out of uniform and off parade the feeling of unfair treatment and the suppression of noble aspirations for higher command and more responsibility has eaten into their ranks, and is alone sufficient to account for the present state of things which can no longer be concealed.

At present the officer of Volunteers' only goal after a lifetime of thankless labour is the honorary rank of colonel, and retirement with a decoration and the right to retain a military title, which he is laughed at for using, he having been "only a Volunteer."

If, under our present system of topsyturveydom and dearth of officers, it be true that we have reached a high state of comparative efficiency, and are acknowledged by the highest military authority to be of inestimable value; to what still higher perfection might we not attain under a rational and practical administration and with the means placed at our disposal to perfect our organisation in all its branches!

Some few commanding officers may feel that the present state of things is the best possible, but I think they are in a small minority. The efficiency of the Force has no doubt greatly improved, but at whose cost? And how long will commanding officers and company officers go on paying for this improved efficiency?

All commanding officers know, but the public are not generally aware, that a body entitled the "Institute of Commanding Officers of Volunteers" has been created under the presidency of the General Officer Commanding the Home District. Its object is to enable commanding officers to meet to discuss subjects concerning the Volunteer Service. The Council of the Institute has naturally occupied itself with various matters affecting the vitality of the Force, and has been in communication with the Secretary of State for War thereon; but when I mention, which I think I may do without impropriety or any breach of discipline,

that, in response to a circular addressed to commanding officers, a list was received of seventy-four different matters calling for remedy, under the eleven headings of Capitation Grant, Equipment Allowances, Recovery of Fines, Penalties, Clothing and Stores, Headquarters, Ranges, Officers, Exemption from Jury Service, Dual Control, Ammunition and Rifles and General—upon which fifty-nine officers expressed their views; and that the opinion was held that it was "hopeless to suppose that the War Office authorities would consider all the subjects proposed," and that "therefore three or four only of the most important of them should be pressed," it may be realised how many years' tinkering will be required at this rate to meet what those who created the Force and now maintain it consider essential to its vitality. Assuming that only three subjects are appealed for at one time, and that only three years' interval elapses between each appeal, it will take, at the rate we are going, over seventy years to obtain all that, in the opinion of the Institute, is at present required.

Since the notes for this lecture were written, the appeal of the Institute of Commanding Officers, and a little mild public pressure, has had some effect upon the Government. With a flourish of trumpets, further so-called "Concessions to the Volunteers" have been announced. In future, 50 per cent. of the estimated year's capitation grant is to be paid in the sixth month of the current Volunteer year, viz., April, and the balance, I suppose, as heretofore, six months after the close of another half-year, viz., in the April twelvemonth following. One half-year's payment will therefore be made at the end of six months' expenditure, and the other half-year's expenditure will be paid as heretofore, six months after its close. Thus, after years of effort, a virtue is made, not of paying Volunteer expenses regularly as they are incurred, but of doling out the amount at intervals of six months and twelve months. The change announced in the mode of paying the capitation grant does not appear so advantageous as was at first believed it would be. Hitherto the grant earned up to the 31st of October in each year has been paid early in the following April; in future the "Returns," upon which the capitation grant is claimed, will be made up to the same date as previously, but the grant will not be paid until the accounts for the year ending the 31st of March following (viz., five months after the grant is earned) have been closed and Army Form N. 1,524 is forwarded to the War Office, and the accounts accepted by that department. For instance, in my own corps Army Form N. 1,524 for the year to 31st of March last was in accordance with Special Army Order of 25th of March, forwarded to the War Office on the 14th of April; but up to the present the Order for the payment has not been issued, and I am unable to ascertain at what date it is likely to be received, although six months have elapsed since the close of the last Volunteer year. Then a decision is come to, not suggested by the influential body of representative commanding officers already alluded to, but emanating from some individual source, that the class of candidate we want to see join our ranks shall, unlike any other gentleman seeking to hold the Queen's commission, be told that that commission is going so cheap that the great and wealthy

Government of the British Empire will give him, on accepting it, £10 towards the cost of his clothes, and if he behaves himself properly, and passes an examination, another £10; but, mark you, if he gets tired of working for nothing, and being slanged for dilatoriness, or if from sickness, going abroad, or any other cause, he leaves the Service within the year, he is to return a proportion of the money (!) and, I suppose, sell his uniform to help raise it. I find it difficult to speak temperately of this proposal of the Government, and fear that, so far from helping to fill our ranks with eligible men, it will have a deterrent effect, and will tend to lower our status. Its withdrawal would be welcomed by nearly every officer in the Force. I cannot understand the principle upon which, even if it were desirable, this sort of grant is made. When a man in the Regular Army is promoted from the ranks, he is given an allowance for outfit of £100 for infantry, and £150 for cavalry or artillery; and yet the bait of £10, to be increased to £20, with conditions regarding its being refunded, is held out as an inducement to eligible gentlemen to accept the Queen's commission in the Volunteer force. The story is told of a north-country colonel who, having exhausted every other means of filling his commissioned ranks, supplied uniforms to the fishmongers, blacksmiths, and tailors of his district, and so completed his establishment of officers. This is the sort of commanding officer who will appreciate the effort of Government to meet his difficulty.

The camp allowance to officers is to be raised from 2s. per day to 4s., the allowance to Regular and Militia officers averaging over 10s.; but then, I suppose, the class of officers the authorities desire to introduce and to make leaders of our troops will be content with less per day than it costs to supply some of our sergeants' messes under canvas.

I venture to predict that this new departure will not bring in desirable officers. There may be slight occasional gains caused by war scares; but no permanent improvement will take place until a more thorough and drastic reform of our administration is brought about. As evidence that it has not yet had much effect in filling our ranks, I notice that, for the week 21st to 28th March, there were fourteen retirements and no new appointments! In return for these "liberal concessions," the hope is expressed that the Volunteers will again rise to the occasion, and by increased efficiency and attendances at drill,[1] which latter is a condition laid down, will show their appreciation of the liberality displayed towards them! It is also stated that corps will be called upon to give greater attention to financial matters —I do not know what this means—and to place themselves more under the rule of the War Office than they have done up to the present time. If this latter means that any independence of control which still exists the War Office will take over with its accompanying financial responsibility, it will be welcomed by every commanding officer as a relief of a portion of his heavy burden.

The discussion of a subject so serious as the one which is under

[1] The rank and file who will get nothing out of the increased allowances are required, as well as officers, to attend in future twelve instead of nine drills—an increase of 33%!

treatment would be unprofitable if proposals were not made for the remedy of the evils complained of. I therefore venture to state what I consider are the only radical changes which might fill our commissioned ranks with eligible officers, maintain a healthy flow of new candidates, and enable commanding officers to work this material up to a really high state of efficiency.

I recommend: *First*, that all candidates for commissions in the Regular Army, whether through Sandhurst, Woolwich, or any other channel, should be drawn from the commissioned ranks of the Militia and Volunteers in proportion to the respective enrolled strength of those two Forces. The recommendation of commanding officers to be necessary to ensure a candidate being accepted.

Second, that the same pay and allowances in every respect should be given to officers of Volunteers when on duty as to officers of Militia, and that the conditions of their service should also be the same.

Third, that the payment of a capitation grant should be discontinued, and in lieu thereof that clothing and equipment should be issued to the rank and file under proper regulations. That the rent of headquarters, drill halls and ranges, travelling expenses and the expenses of camps, money for shooting prizes and the payment of bands, should be defrayed by Government; the two latter items being limited to a fixed sum *per capita* for all corps; and that ammunition for all purposes, including machine guns, should be supplied by Government. In short, that in no case, whatever might be the nature of the parade, camp, march, or manœuvre, should officers be called upon to pay for same; so that, beyond the cost of uniform and the time given to the study of his duties, he would not have to put his hand in his pocket.

Fourth, that Officers of Volunteers should not be practically excluded from holding brigade commands, and when exceptions are made they should not necessarily be accorded upon the grounds of local wealth or position, but be granted to efficient colonels of Volunteers as a reward for ability and organising power. With regard to this I would like to again quote Lord Kingsburgh, because he is never afraid of speaking or writing what he thinks. He says:—"In 1859 the military mind had no idea of such a thing as citizen soldiers being organised into battalions and brigades, and capable of being used as troops in the line of battle; and a 'Green Book' was issued officially for the instruction and training of Volunteers, which was based upon the idea that the highest Volunteer command would be that of captain." The War Office mind cannot yet conceive that commands higher than that of a battalion can safely be thrown open to Volunteers—or does some of the old jealousy still linger in the breasts of Regular officers? In the American Civil War successful generals on both sides were made out of civilians, without any previous military training. The present gallant General Commanding the Army of the United States is one of them; and one of the best, if not the best, general in the Confederate Army, Stonewall Jackson, had no Staff training, and had been ten years a professor of mathematics before the war broke out. But the English gentleman who devotes fifteen or twenty

years to the study of war and successfully commands troops in peace during that time is not considered entitled by virtue of seniority or ability to a higher command than a battalion. The few appointments which are made are the exception, and not the rule, in this matter, and they have not in all cases been bestowed upon those best qualified from a strictly military point of view to hold them.

I need not refer to the long struggle which has been necessary to obtain authority for the formation of Volunteer Field Artillery which is at last being conceded. The Gold Medallist of this Institution for the best Military Essay for 1893, a Regular officer, after exhausting himself with adverse strictures upon the whole Volunteer force, alluded to the intention of a War Minister to raise Volunteer Batteries of Mounted Artillery, and said that "no dependence could be placed on such a force." Why, also, should not officers of Volunteers be permitted to qualify for Staff duties in their own force? Colonels should be allowed to qualify for Volunteer brigade commands and Field-Officers for Brigade-Majors under similar conditions to those ruling for such appointment in the Regular Service; officers of Volunteers, and the rank and file of the Force, should also be permitted to take part in foreign expeditions, *i.e.*, offers of service should be accepted when special expeditions are dispatched from this country. The acceptance of the Post Office detachment of telegraphists in the Egyptian campaign did much for the popularity and discipline of the Post Office corps. Officers of Volunteers should also be attached to the War Office permanently, or for a term, as advisers on Volunteer matters. All other branches of the Regular Army are so represented; why has the quarter-of-a-million of our last Reserve no representative there from among their own ranks? Our officers do not look for pecuniary reward, but they do ask for due recognition of their services by the grant of a wider scope for the exercise of their energies in connection with the organisation and administration of the Force they have created.

Now what would be the position of the officer of Volunteers under the system I have suggested? He would still have to find his raw material —recruits—without pay or bonus to offer them. He and his recruits would still have to give their time to the country, and he would have to organise his drills and administer the interior economy of his corps; but, freed from the liability and responsibility of ways and means, he could devote more time and attention than hitherto to his work, and, with a full supply of officers, their efficiency as a whole could be raised to a level on a par with the requirements of the times.

Under these conditions, commanding officers would no longer labour under the burdens hitherto imposed on them, but, with ample material to choose from, they would be able to mould and bake their clay into serviceable bricks at the expenditure only of their time and labour; and have the prospect of a wider field for the display of their talents, and of honourable recognition of their services. The granting of commissions in the Regular Army to Militia officers has had the effect of bringing hundreds of eligible men into the ranks, who serve their two to three

years with their battalion before going up for the Army examination; and out of the many candidates who fail annually to pass into the Army, a good proportion—at any rate all who can afford the time to do so—remain in the Militia, preferring to get what soldiering they can rather than give up the profession altogether. The contrary effect is proved by the falling-off in candidates for commissions in the Militia Artillery since the number of commissions was reduced. When R.A. commissions were first thrown open to Militiamen the number given annually was ten. The lists of officers, previously almost empty, filled immediately; but, instead of leaving well alone, the authorities unwisely cut down the number of R.A. commissions to two; with the result that applications dropped at once, and to-day the Militia Artillery lists are the weakest of any in the Army List. It can be shown that officers of Volunteers in many cases do much more soldiering in the course of a year than Militiamen generally. If the training a Militia subaltern receives in two years fits him to compete for a commission in the Army, can it not be argued that Officers of Volunteers of equal service are equally fit? If the offering of a number of commissions in the Line to Militia subalterns has practically filled the Militia lists, is it not an experiment that might be tried in the case of the Volunteers? The placing of officers of Volunteers under the Army Act would relieve entirely the feeling which every sensitive officer at present experiences that he is at the mercy of any superior who, from any motive whatever, reports adversely upon him. The granting of pay and allowances, with the other advantages already described, was not alone sufficient to keep up the establishment of Militia officers; why, then, should it be imagined that the doling out an extra shilling or two at intervals of several years will keep our ranks filled? It appears to me the height of folly to imagine that it will. It is trifling with the safety of the Empire to continue treating the Volunteer force as it is being treated.

Ministers in this country never have risen to the necessities of the occasion where Army reform is concerned, until the voice of the governed has been heard; but the responsibility which rests upon them is none the less grave because up to now we have succeeded in warding off serious military disasters. The late Commander-in-Chief's constant cry, when dealing with Army reform, was that more money was necessary; this is, no doubt, to some extent the case, but improvements in organisation and administration can be carried out without more money, and the Volunteer force can be properly organised and administered without requiring much more than is at present spent upon it, and with results which, I believe, would astonish everyone. The military knowledge of Regular officers twenty-five years ago was as much, if not more, limited than that of the average Volunteer officer of the present day; but the authorities recognised that improvement was necessary, and it has been brought about with most satisfactory results. Why cannot steps be taken to improve the leaders of the quarter of a million of troops upon the existence of which the nation slumbers in imagined security? It can be and it ought to be done; indeed, unless we are some day to pay a heavy penalty, it must be done.

At present there are no rewards to officers of Volunteers for extra zeal or services of any special nature, such as the organisation of cycling, signalling, transport, machine guns, and ambulance, or the establishment of rifle ranges and tactical societies—everything is taken as a matter of course. I consider such special services as these ought to be recognised.

As to the position of the Government under the altered arrangement, I believe a saving could be effected in the Vote for the Volunteer force, but, whether that were so or not, the saving to the nation in the greatly improved condition of the citizen army would amply compensate for any increased outlay. The Volunteer Service is a great and wide-spreading educational power, and for this reason only is worth all the money necessary to be spent upon it, to say nothing of its value as a national insurance, and as fostering a spirit of patriotism and loyalty to established authority.

Time does not permit of my entering into details of the many advantages which would accrue to the Force by placing it on a par with the Militia in the manner I suggest. With regard, however, to non-commissioned officers, there is ample material in our ranks to choose from, but a small annual money grant payable to sergeants who passed an annual proficiency examination would enable many good men to devote the necessary time to their work who cannot otherwise afford to do so. Under the present system aged, bearded, and badge-covered sergeants are praised for their long and efficient service; and young, zealous men are censured for not equalling immediately on promotion the standard of sergeants in the Regular Army.

With regard to the Volunteer decoration and medal, their effect is often, with the former, to keep in the ranks men who ought to be superannuated, and the latter is too remote a reward to influence recruiting. Let the service be so arranged that none but thoroughly efficient men can be entitled to these honours, and their value would be immensely increased.

It may be deemed unwise to publish through the JOURNAL of the Institution for the information of foreign Powers any admission of weakness in so large a factor of our defensive forces; but no reform in naval or military organisation and administration has ever yet been effected in this country without first bringing home to the public the necessity of it; and if this humble effort of mine helps an awakening of the present somnolent content of the nation with the Volunteer force it will not be thrown away. It is an ill bird that fouls its own nest, and it may be thought unwise to decry in any way the quality of a Force to which one belongs; but those who have hoped against hope that "Society" would rise to the occasion, and contribute its essential quota towards maintaining that Force by sending its sons and brothers into it, or that the authorities would tackle the problem and solve it effectively, are now in despair, and, as a last recourse, feel that through an appeal to the public lies their sole chance of improvement.

The only alternative to what I suggest for maintaining a really efficient Volunteer army is to put in force the full ballot for the Militia,

with exemption only to men who have done five or seven years' efficient service in a Volunteer corps. Attention is now being called to this by Lord Wemyss and other officers; but I have advocated it myself for many years past, and I think we are drifting slowly, but surely, towards this most effectual remedy for our present military shortcomings. Personally, I should much prefer this solution of the difficulty, and, contrary to frequently expressed views, I believe the national feeling is ripe for such a change. The annual numbers to be drawn for the maintenance of the Militia would be a very small percentage of the able-bodied manhood of the country, the standard of recruits would of course be raised so that battalions would be filled with real men, not, as often now, with weedy boys. Many who were drawn for service would be quite content to do their time at soldiering; those who dreaded the possibility of having to lie down for a month annually, thirteen in a tent, with a Tower Hamlet costermonger or a sturdy mid-county miner, would flock into Volunteer corps, with the result that an entrance fee and an annual subscription could be demanded, and applicants would be made to supply their own uniform and equipment, as was done in the early days of the Volunteer movement; in fact, the Force under the new conditions would cost the nation nothing; its strength could be increased to half-a-million men, and an effective Reserve be formed. It would become a *corps d'élite*, the equal of which the world had never seen. Any standard of drill, shooting, and efficiency could be maintained; for, if every condition of the Service were not fulfilled, and the most perfect discipline exhibited up to the last day of the stipulated term of service, commanding officers could withhold the efficiency certificate which exempted from the Militia Ballot. To form a Reserve, the term in the active Volunteers could be limited to, say, five years, with five or more in the Volunteer Reserve, proper regulations being made as to extended service for non-commissioned officers who wished to remain in the active battalions. In such a Force the officers could, of course, be made to attain the same standard in every way as those of the Regular Army. Such an army could also be made thoroughly mobile. A mobile army is better than fixed fortifications. Much annual expenditure could therefore be saved on masonry and heavy ordnance, and the amount be expended on equipping a Volunteer transport, artillery, cavalry, machine guns and mounted infantry, etc. Needless to say that under such conditions all nervousness as to possible invasion of these Islands, or successful encroachment upon any of our outlying frontiers, would be at an end. To prevent even an attempt at an invasion, it is necessary to show that not only would our fleet have to be defeated or decoyed away, but that a mobile army strong in numbers, organisation, discipline, and efficiency, would have to be dealt with after landing.

Before concluding, I would like briefly to refer to an article by Lord Raglan in last month's *National Review* entitled "The Militia"; the views therein expressed coincide in many respects with those I have set forth, and are as much applicable to the Volunteers as to the Militia. His lordship, in dealing with the deficiency of officers which still exists in the Force of which he writes, says:—"It ought to be at once remedied. All

officers should enter the Army through the Militia; they might not remain permanently even if they did not enter the Army, but the country would benefit by their services for two or three years, and a reliable reserve of subalterns would be created." With regard to the permanent staff he says:—"The commanding officer should have the responsibility of choosing his adjutant, the members of his permanent staff, and the right to dispense with them if they were not suitable." Further, that—"Rewards should be more freely given to good officers. The C.B.'s now served out are so few as to prevent all but the very smallest proportion of commanding officers obtaining one. Inefficient men should be ruthlessly got rid of, and claims based on length of service, high rank, or great wealth, should be absolutely disregarded," and "pay for a bandmaster or an allowance in aid of a band should be granted to all corps." In all of this I heartily agree with Lord Raglan.

Finally, in speaking as plainly as I have done, I can hardly hope to find every officer in accord with me upon the points raised; or in my method of dealing with them. I do not think I have exaggerated anything, or set down aught in malice. My only fear is that hyper-sensitive critics may think I have crossed the border line between military discipline and civilian criticism of an out-of-date system of providing for the protection of our vast Imperial interests; but I trust my military superiors—in respectful submission and subordination to whom I will yield place to no man—will acquit me of any such offence.

My task is ended. I have left much unsaid that should be spoken. My subject, through limit of time, is necessarily condensed. I have endeavoured, however, to sketch a picture of the three branches of the military service as they exist. I have boldly admitted the inevitable shortcomings of the branch in which I am permitted to serve, and have suggested a remedy without going into the details of its working; for with the principle of it accepted, the rest would be easy of adjustment. I have ventured to point out the alternative, to which I am convinced we must arrive, if our existing difficulties are not boldly and practically grappled with. I feel convinced that one plan or the other must be adopted; it will be criminal not to do so. The shuffling of Continental alliances and the strengthening of the Navy, satisfactory as the latter is to every patriot, may stave off national reverses; but only the strong man armed will save the household in the hour of danger, which is bound, sooner or later, to come upon us like a thief in the night.

Major H. J. F. PRAEGER (2nd Middlesex Vol. Artillery): I think the thanks not only of the Volunteer Service, but of the country in general, are due to the commanding officer who has brought this paper before us, because the subject has to be dealt with. We have, to use a common expression, burked the subject too long. It is a serious matter that the Volunteer force should be allowed to be under-officered in the present manner, and in its result will affect the citizen and ratepayer to a very great extent if it continues, for there would be but one course open, and that is conscription, which would to a great extent reduce the earning power of this nation, and induce the want of money which many of our Continental neighbours suffer from. The shortness of officers, I take it, is due in many cases to four principal causes. The first is, that our system is wrong, because the more

you labour the more you pay; and to practical business and professional men—who, after all, are the sustaining power of the country, for they work and make the best officers—there is a time and a period of their service when they begin to think it is absolutely foolish to continue, at the expense of their families, to put their hands in their pockets to pay for their efficiency, although they are perfectly willing to do the labour and give their time. The next point is the question of status. I have, perhaps, been fortunate enough to have introduced as many officers into the Service as most men, but the great difficulty I have met with, when speaking to parents of eligible men whom I wanted to enter the Service has been this:—"Very well, if my son enters the Volunteer Service, I have to pay for his outfit and also shall have to supply him yearly with money for his expenses. What will be the result? He is sneered at by the newspapers; he is looked down upon by a great many officers in other branches of the Service: why should I let him go in for it?" It seems a very hard thing to imagine that because a man wears a different braid or a different coat he should be a different article to another. I have met a case where a man's son was willing to join a Volunteer regiment; his brother, who was in another branch of the Service, persuaded him to wait or not join, as Volunteers were not appreciated. I do not say the whole Service looks upon us in the same way; on the contrary, most of the leading Regular officers encourage and help us, and those who have been fortunate enough to attend camp and Shoeburyness have found kindness, assistance, and appreciation from the Royal Artillery, possibly to some extent due to the sort of freemasonry existing amongst gunners the world over, but more to the fact that many of the Royal Artillery at the School of Gunnery have had long connection with the Force, consequently knowing it and appreciating it. The officer of Volunteers cannot and does not expect to be looked upon as being as efficient as a Regular officer, but he is an officer and endeavours to serve his country. Another point, and a very serious point, is the question of the insecurity of his position. An officer joins a regiment and works hard for a certain time and obtains promotion. His business or profession takes him away to another part of the country. Instead of being allowed to remain in the Service and be attached to another regiment for service and keep the benefit of his labours, he has either to resign his regiment or go into a lower rank in another regiment. That is manifestly a hardship and a loss to the Service. There is another point which I will just touch upon now. It is a question which is dealt with in the paper. The class of officers who are required in the Volunteer Service are not those who want their uniforms paid for at the expense of the State. We might as well ask to have our nightshirts paid for. That is not, as I understand, what we want—what we wish are rank allowances, and not to have to pay to make ourselves more efficient. There comes a time when a man's family is increasing and his expenses are increasing—a man, say, with £600 to £1,000 a year—and he says to himself: "I have no right, for patriotism to a country which will not support my family, to take away so much money for efficiency." The lecturer has touched the right point. The officer of Volunteers requires no pay, and he should not be paid for doing his duty, but he should not be called upon to pay. In my own regiment we have lost several very good officers who have worked with us for five, six, or eight years, who have left us owing to their family expenses increasing and to their Volunteer expenses increasing; and nobody but officers of Volunteers know how those expenses increase. Touching on the question of Regular officers as regimental officers of Volunteers, with all due deference to their superiority in leading in the field, they possess a decided inferiority in dealing with Volunteer troops, in dealing with men who are engaged in business and cannot in times of peace be pressed. To deal with men of that class and to get all the work you can out of them, you must know the class and understand and know thoroughly the conditions under which these men can give time. You can get a lot of work out of them, but not at certain stated periods. Many general officers, with the best intentions, have laid down certain plans whereby we may increase our efficiency;

but, unfortunately, they always forget that a man cannot give up his bread and butter to carry out those plans; and nearly all these things that have been laid down could have been arranged with a little discomfort probably on the officers' part, by night-work, when men would willingly give their time. As the lecturer said, what we have to do is not to tinker with the question and put off the consideration of the subject. What we want is to have such means that when you do get an officer you can keep him, and that you can induce a man to come forward and enrol himself as an officer. If the Queen's commission is of so little value that we have to go begging for men, and when we have them they are not recognised, then the sooner we are disbanded the better. We are either of value or not. If we are of value, recognise it; if we are not of value, tell us so—do not let us labour in vain. Not only do we lose the respect of the men, but we lose our authority. We are really passing now the crisis that many years ago the Militia had to pass through, and which, in earlier times, even the Regular Army had to pass through, on the question of having undesirable men in the Force. I admit there are some, but why are they there? Through our bad system a commanding officer cannot always pick and choose from among the applicants; but if he is short of officers and requires money, he may have to take an undesirable man on account of his money. Money is an accident and does not make your man. What you require is the stamp of men who enter the Army or the Militia, or go into respectable businesses, and they are the men who will not labour and carry on matters longer than they see the practical utility and necessity of doing so. An undesirable man who has joined, thinking that he has a position, and whom the commanding officer cannot do away with, is the man who remains at any cost, and that is why you probably see in some of those officers now serving a percentage of men who are inefficient. Another point is the question of promotion. You have several young men who are working hard, and the Volunteer field-officer, if he is a good one, should not be treated on the five years' system, because so long as he is able and capable he ought to be kept. There are very many of them, but there are a few who are merely kept there because the commanding officer does not wish them to go until the lower ranks are filled, but they deplete the lower ranks; the men work for a captaincy for ten years, and they still see a senior inefficient officer being kept above them, which prevents them from coming forward. The result is that they resign in disgust at the very time when they should become most useful. The inspecting officer may think: "Why should I make myself particularly disagreeable; that major is doing just about as much work as he can do," and nothing is said and the field officer remains on. The junior officers think that were the inspections more detailed, were the books inspected to see the average attendance of the officers, and what they did—instead of the small test of seeing whether the company or battalion can be handled for half-an-hour about the field—then the general value of the individual officer would be seen, and the man who has been working for 150 nights a year would receive some kudos, which another who has attended nine or twelve obtains, because he happens to be senior and selected on parade to do something which probably he has been coached up for by the sergeant-major or the adjutant a quarter-of-an-hour before. I am speaking, perhaps, a little out of order, but I feel very deeply on the subject of the dearth of officers. I think that not only military men but the public at large should see and know some of the disadvantages under which we labour; and that some proper means should be taken to remedy them. I have a great deal more to say, but no doubt there are many others who will speak much more to the point and more fluently than I can.

Colonel T. STURMY CAVE (1st Vol. Batt. Hampshire Regiment): It is a very interesting subject and a very important one that the lecturer has treated in his paper. Almost everything I have heard or read upon it before has, I am afraid, been rather like a physician who has been treating a symptom and not really a disease. The dearth of officers in the Volunteer force I regard merely

as a symptom, and it is a symptom of the same complaint to which every inefficiency in the British Army, whether Regular, Militia, Yeomanry, or Volunteer, is equally to be traced. They are all symptoms of this one great cause—that the British public does not believe that we shall ever be wanted to fight. The Army is not organised on any system or on any plan for conducting other fighting than that with frontier tribes in India or the savage tribes in Africa—"little wars." We Volunteers, when we speak to any member of the public, elicit the following opinions from nine hundred and ninety-nine out of a thousand: that this country does not want to fight a European war. Well, with that I quite agree; but it is not clear that we are never likely to be called upon to do so; and, unfortunately, people think that if we have to fight, in the event of another country throwing down the glove, our Navy is quite sufficient, and if the Navy is not quite sufficient then we have half-a-million men in the shape of Regulars, Militia, and Volunteers at home, and therefore it must be all right. That being the sentiment of the public, it must be altered, or we shall never have a really efficient army, and we shall never get rid of this dearth of officers in the Volunteer force.

Colonel LONSDALE HALE (late R.E.): The title of this lecture seems hardly to correspond to its contents, for there are a great many more things mentioned in it than the dearth of officers in the Volunteer force. The lecture seems to include a long list of the grievances and injustices under which the Volunteer force labours. I shall not touch upon anything but the dearth of officers. Colonel Alt does not clearly explain to us in his lecture the nature of the dearth of officers in the Volunteer force; so I have taken the Army List and have gone through every Volunteer corps in the Service, whether infantry, artillery, or engineers, and I have noted down for myself exactly what the nature of the dearth of officers in the Volunteer force is. The Artillery Volunteers suffer to a great extent, and a dangerous extent, from the dearth of captains; but taking the Volunteer force as a whole the dearth of officers is that of subalterns. Taking the Artillery Volunteers we find that they ought to have some 880 subalterns; instead of which they have only about 440; therefore according to the general numbers they are 50 per cent. short. But on looking down the first twenty-five corps I come to corps which are so short of subalterns as to be almost useless, as, for instance, corps with four subalterns out of twelve, or two subalterns out of fifteen, or only one subaltern out of fourteen. Do you include these among your 250,000 efficient defenders? I now come to the climax—a corps which has not one single subaltern out of the whole twelve. That same corps has only five captains out of eight. Do you include that in the 250,000 efficient Volunteers? This corps is the 8th Lancashire Volunteer Artillery, whose headquarters are in Sefton Barracks, Liverpool. Going over to Admiral Street, Liverpool, where the 6th Lancashire Volunteer Artillery have their headquarters, I find that the corps so far from being short have the whole of their nine captains and the whole of their fourteen subalterns. That shows the extreme, as I have always maintained, ultra local character of every corps, and, consequently, that you might adopt some general measure for improving the so-called Volunteer force and which might do good possibly to the 8th Volunteer corps in the city of Liverpool, but which is not wanted, and no use whatever to the 6th alongside of it. Passing on to the engineers I find generally there is a dearth of subalterns. Some of them, however, are over-officered, if such a thing is possible. For instance, in Glasgow the 1st Lanarkshire have their nine captains and an extra subaltern—fifteen instead of fourteen. The Tower Hamlets have ten instead of nine captains and its fourteen subalterns; but the 1st Lancashire, which is in Liverpool, has three subalterns only out of fourteen. Passing on to the infantry, there are certain corps which, if subalterns are worth anything, and I suppose they are of great importance in war not only on the battle-field but off it, ought to be deducted from the number of 250,000 effective Volunteers available at the present moment. There is the Loyal North Lancashire which hails from Preston. The 1st Loyal

Lancashire have only two out of fourteen, the 2nd Battalion only two out of fifteen. Of what worth will either of them be on a march, especially if what Mr. Spenser Wilkinson says is true, that discipline and officers are merely different names for the same thing? When we come to take them in great groups I find, in Aberdeen, the Gordon Highlanders have six battalions. They ought to have fifty captains and eighty subalterns. They are only two captains short and two subalterns short out of that large number. I turn to another big city, Manchester, where there are six battalions of the Manchester Regiment, and I find that of sixty-five captains they have sixty-four; but out of the ninety-nine subalterns they have only thirty-five. Then we go a little further and take the West Surrey, the 1st and 3rd Battalions are each one captain and nine subalterns short; the 2nd has two extra subalterns. The 2nd and 4th Surrey have all their captains and each has two extra subalterns. The London regiment, too, shows similar characteristics. Going through the rest of the List I find one which I commend especially to your notice. If I were to become a Volunteer I should go into it at once, for it is the best provided regiment of any in the Service. It has, it is true, three subalterns short; it has its full eleven captains and fourteen out of seventeen subalterns. But all the bodily and all the spiritual wants of the corps are thoroughly provided for. If you are knocked over on the field there are six medical officers who will all come running after you and take care of you. If you are told that your last hours have come they have eight acting chaplains to look after your soul. So much for the nature of the dearth: how about the causes? Gentlemen will get up and tell us the causes of this; but how can anyone tell us of the causes of the deficiency of officers in a number of corps which differ so utterly and entirely in their condition as the three or four hundred units of the Volunteer force? I cannot say what these causes are, but they could easily be ascertained. I do not believe it is because men are £10 short. I do not think making good the £10 is a remedy. There is one person who can find out exactly, and that is the Inspector-General of the Auxiliary Forces, and were I in his position I should write to my friend here who is five subalterns short and one captain, and I should also address the same letter to all officers. I should say, "I presume you have made every effort to get officers. Send me a return showing the social standing and position of everyone to whom you have applied, and give his reason—I do not ask his name—why he will not join the Volunteer force." If you do that with every corps in the Service the authority will find out whence this dearth of officers arises in each case. It may be that a locality is very athletic and young fellows will not come. It may be the expense, or it may be a dislike to the social standing of the officers already in the corps. But it is only after obtaining this knowledge that remedies can be arrived at. Just one word as to the conclusions to which these facts and the statements put forward by Colonel Alt in his lecture lead us. I own I went away very depressed about the Volunteer force after Colonel Balfour's lecture; Major Rickards did not at all lift me up again; and I feel worse than ever after listening to what has been said to-day. We have got the figures, and if you take a battalion thirty strong of officers, we find, when we turn that battalion into the field, they are 20 per cent. short of officers. They will therefore go into the field with twenty-four officers only. What will those twenty-four be like? Do not fly at me, gentlemen, for what I am going to say—do not say I am attacking you for one moment—I am only quoting what one of your own selves, the lecturer, a commanding officer of Volunteers, says. We are told that 50 per cent. of the officers at present serving are "more or less inefficient and incapable of leading troops in peace manœuvres, let alone in war." Out of the twenty-four that knocks twelve off. Whether, as we are told, the commanding officer is to be reckoned inefficient or not, I do not know. But we will leave you with an efficient commanding officer. You have twelve men to lead that battalion, and how many of those twelve men leading that battalion can you assure yourselves that they are, in the words of Mr. Spenser Wilkinson, "a motive power, a

staff, and a firm support"? Gentlemen, I will not take up your time any longer. We are indebted to the lecturer for another revelation as to the efficiency of the Volunteer force *as it stands!*

Colonel C. H. COLES (1st London Vol. Artillery): I must confess that when I heard Colonel Lonsdale Hale reading out that list of subalterns in artillery regiments, and when he got down to the L's—Lancashire—I felt quite certain that he was coming to the L's of London, and would probably spot the fact that I have not my full complement of subalterns. There is no question about it, the dearth of subalterns is a very serious matter indeed, and the dearth of officers generally. In my mind there are two points which to a very large extent account for this dearth of officers. One is the painful ignorance of the British public, as a whole, with regard to military matters; and the second is the apathy of the young men of the present day. Those are the two great points. The ignorance of the British public generally is really quite ridiculous. I will give you a most absurd instance, and I daresay similar cases will occur to other officers. A distinguished officer was going on a tour of inspection; he had on his head a cocked hat and on his breast he had the ribands of three campaigns. He was standing on the station platform, when up came to him a gentleman of the navvy class, who said to him, "Beg pardon, me and my mate have been a discussing as to what you are, and my mate says that he believes you are one of those men that goes to fairs and beats a drum." My friend said, "What do you mean—a Cheap Jack?" and the navvy replied, "That is it—a Cheap Jack." My friend said, "Well, I am not a Cheap Jack." The navvy said, "Would you mind telling me what you are then?" "Well," said my friend, "I am a soldier." Of course it is a ridiculous story altogether, but you really meet in every-day life with things almost as silly as that. The first thing to be done is to educate the British public on military matters. With regard to the apathy of the young men of the present day, what we really want to do is to catch the young public school boy and train him as a soldier. I think myself that some officers are to blame for some of the results that we see, because although some men are officers they are not soldiers—I do not mean soldier in the dictionary sense of the word, I mean a soldier in the military sense. Officers must not only be officers but soldiers, and then we shall not have young men refraining from joining and talking about soldiering not being "good enough," and things of that sort. Those two points strike me as being what we must endeavour to do. With regard to the remarks of the lecturer, although I do not agree with all of them, I am entirely in accord with some, I think expenses ought to be granted by Government, because there are very many expenses that officers incur, and for which they have to put their hands into their pockets—expenses they ought not to be called upon to pay. I should say they should have the same allowances as the Militia. I also agree with him in regard to War Office staff appointments. I hope the time will come when we may see officers of Volunteers at the War Office as advisers on Volunteer subjects. Also with regard to placing officers under the Army Act, I am very sorry indeed to see that that has not been done. I am also one of those who certainly agree with the lecturer that the time is coming—and I think it will be a precious good thing when it does come—when we shall have in force the Militia Ballot Act. That would catch a great many young men who manage to keep out of soldiering altogether. I believe the country is coming round about it. I have spoken to a great many people about the Militia Ballot Act—whether they understand it or not I do not know, but they all say it is the thing that we should have. There is just one remark the first speaker made with regard to inspecting officers. He seemed to imagine that inspecting officers did not know how many drills officers in various regiments did, and that if they inspected the books and so forth they would be able to see who were the men who did attend and who were the men who did not. I can tell him for his guidance that I know the inspecting officer who inspects my books has a very good idea as to who works and who does not. I really do think

we ought not to talk about inspecting officers in that way at all. We ought to let those things pass altogether. They are our immediate superiors, and I must deprecate any remarks made with regard to inspecting officers or general officers, or any other officers.

Captain A. H. EAST (1st Vol. Batt. Hampshire Regiment): I shall not take many minutes, but Colonel Hale particularly wanted to know the absolute reason for the dearth of officers of Volunteers. I have had a good many years' experience in the country, and I think I can give you some of the reasons why men do not join. The public who are willing to give a private all the credit for the discomfort he undergoes, the loss of wages and one thing and another, do not appear to be willing to give the officer credit for either losing any money, spending any time, or taking any trouble about the matter at all. They do not seem to imagine that he has to do any large amount of mental or physical exertion to hold his commission, and they think he really goes in for it in order to have a pretty coat and swagger about in it. As a rule they generally laugh at him about it. I had that view very forcibly placed in front of my nose once. We were sending round asking for subscriptions for the company (I did not want to pay it all myself). Amongst others we asked was a retired naval officer of fairly high rank. We wrote to him, and this is what he said, not quoting the exact words, but very closely, "I shall not give anything. I think if people want to swagger about in a uniform they ought to pay for it themselves." That was his version of it. Curiously enough it became necessary for the son of this gentleman to join a Volunteer battalion as he was a University candidate for the Army, and the only Volunteer regiment he could join was ours. He was attached to my company, and was a very nice boy indeed, and when in course of time he left to go into the Army his ideas on the subject were, I believe, modified somewhat—at least, I gathered so. That is the sort of thing that keeps the good men out. The public have got the idea that we only swagger. If you ask a man why he does not join, his first remark is, "It is such rot. You do not do anything at all, and it is only swaggering about the place in your uniform—walking up and down the town playing soldiers." When you explain to them that that is all a mistake, that there is a great deal of work if they choose to do it, you are met with the reply, "There might be, but you don't get the credit for it." The real trouble is that the public do not give you credit for having done any work. They cannot see that you are bound to do any particularly large amount of work by the regulations, and they assume you only do just the amount you must do to scrape through the regulations. The result is that if you escape the imputation of its being bad form for joining, and that it is simply to put on a red coat and walk up and down the town in it, they look upon you as an entirely new kind of idiot altogether. If you live in the country and if you want to get the respect of the townspeople you must go in for cricket or football, or even become a chairman of the parish council; but to expect an officer of Volunteers to be in the same street as the secretary of the local lawn tennis club socially is perfectly preposterous! You are looked upon as a species of sham and the worst kind of sham—a sham that does not deceive anybody at all. That is the thing you have to fight against. If you really want to alter all this you must raise the status of the officer of Volunteers somehow. There is only one way to do it that I know of, and that is to make a commission in the Volunteer force a thing you have to earn by hard work and by acquiring a considerable amount of knowledge; make it so that the public know that such is the fact. Why the status of Army officers is high is because everybody knows that a man cannot hold a position in the Army unless he works hard and knows a good deal. It is no good some officers of Volunteers working hard and trying to learn a good deal, and doing five or six times as much as the regulations say they must, if they are to be judged on the plan that they only do the bare amount. You must raise the standard required by regulations to do that. You must make the examinations compulsory instead of voluntary to start with. Honorary rank will not do at all; that will not help matters. The

chance of earning honorary rank will not bring these men in; decorations will not bring men in. They may even make matters worse. Honorary rank, they say, only makes it a little more swagger; it does not help matters the least bit in the world; you must have those stringent requirements as to knowledge, that is the only thing. Colonel Hale asked about things in some regiments varying from others. I was reading the memoirs of Madame Junot, wife of one of the generals of the First Napoleon. I came across some of the remarks of Napoleon, which were rather peculiar, and struck me at the time. Someone had been saying to him that one of their army corps was in rather a bad way, and that some regiments were untrustworthy. Napoleon's remark was, "There are no bad regiments; there are a few bad colonels." I think if you are going to increase the education of Volunteers you ought to begin at the top—I really do. What I mean is this: I think that no man ought to hold a rank in the Volunteers until he has passed the same examination for the relative rank as he would have to pass in the Army. That is my view on the subject. I think the moment that is done, and the public know you have to pass those examinations, you will find that the men who now do not care to go in for the Volunteers because they have the idea that it is bad form will think it is good form to go in, and you will get any amount you want.

Mr. SPENSER WILKINSON (late Captain 20th Lancashire R.V.): I rise, Sir, with some diffidence, because I had the misfortune to be prevented from hearing Colonel Alt's paper, and the earlier part of the discussion; but I read the paper with very great care, and my main object in coming here to-day was to add my testimony to the correctness of the views which he has expressed as regards the present condition of the officers of Volunteers. I do not think that there has been in this Institution any better or truer exposition of what may be called the case of the officer of Volunteers. And I venture to say this, because, though I have little knowledge of the metropolitan corps, I have a considerable knowledge of Volunteering in the North of England, and I can assure Colonel Alt that he has expressed the views and the feelings which to my knowledge prevail among the officers of Volunteers of Lancashire and Yorkshire and some of the other Northern counties, as well as in parts of the South of England. With regard to the remedies, I am in the main in accord with him, though I do not believe it necessary or desirable to introduce a change by which the only avenues to commissions in the Army should be either through the Militia or the Volunteers; nor do I think it necessary or practicable to re-introduce, in the sense in which he has proposed it, the ballot for the Militia. That is a measure which I do not believe public opinion in this country would adopt until after disaster, and after disaster very much more serious measures will be taken. I should like, if it were in my power, to add emphasis to one passage in which Colonel Alt, I think, puts the matter in a nutshell. He says, "Those who have hoped against hope that society would rise to the occasion, and contribute its essential quota towards maintaining that Force by sending its sons and brothers into it, or that the authorities would tackle the problem and solve it effectually, are now in despair." I believe those words to be no exaggeration. They recall to me a passage which I was reading the other day in the only original work of our time upon strategy, the work of a very thoughtful and experienced writer, who, after pointing out that war is the most solemn test of a nation and of all its classes, goes on to say, "A nation in which the upper classes have squandered themselves in mere enjoyment will, when the trial comes, find itself short of leaders." It seems to me that the Volunteer movement offered a great opportunity to the upper, and, as they used to be called, the leading, classes in this country. It was a spontaneous movement, and it was an opportunity for the better classes to put themselves in its front as the leaders. The exposition of the failures which Colonel Alt has read to you is the evidence that the upper classes have hitherto failed in their duty. I do not propose at this late hour to go into any details as to the method upon which an improved and a larger supply of officers for the Volunteers is to be looked for, but if I might be allowed to express in a few words the view which

I believe is largely held by those officers of Volunteers who are sincere in their efforts to do a work which they conceive to be a national duty, I would say that the right way of bringing officers into the Force is to make the position of the officer of Volunteers a position worth having—not by giving him pay, which possibly would be the ruin and the end of the Force; not by multiplying fictitious decorations, which I think are degradations to the Force; but by giving the officer opportunity to learn his duties, by giving him the best teaching that you can give him, and by giving him scope for the performance of those duties, so that he may be lifted up by the responsibility which will rest upon him.

Colonel the Right Hon. J. H. A. MACDONALD, C.B. (Lord Kingsburgh), (Commanding the Forth Volunteer Infantry Brigade): I had not intended to make any remarks to-day, but as allusion has been made to my name in the lecture and mention made of it by my friend—whose kindness I reciprocate by calling him my genial friend—Colonel Hale, I feel almost compelled to say a few words. I am certain of this, that you will never fill up the vacancies in the ranks of your officers satisfactorily in the Volunteer force as long as it is the fact that the nation, as a nation, is practically indifferent to the existence of a Volunteer force altogether. That that is the fact as regards those classes of society who necessarily have a dominant influence in such matters, I am sure every Volunteer can testify from his own personal experience. Colonel Hale has, with his usual laborious energy, gone over the whole of the Army List, as regards the Volunteers, to ascertain how many regiments, and what regiments, were short in their list of officers. He says the regiments which are short in their officers—those that are very short—ought immediately to be wiped out. That is not my idea of the way to deal with the men in the ranks that are Volunteers—to wipe them out of existence because there are not sufficient officers. These regiments should never have been allowed to get into that condition, and the persons who are responsible—I will not say the persons, but the department which is responsible—for those regiments having been allowed to be in that condition now, and, perhaps, to have been in it for years, are the superior powers which rule our military affairs. It is quite certain that if these causes had been dealt with when they ought to have been dealt with, many of the difficulties would not have arisen. It is neglect in the public and in a public department—a neglect to exercise proper management and control, such management and control as any man would exercise in the management of his own business in ordinary life, which is the cause of things having fallen in some cases into an evil condition. It is these two things which are the causes of all the difficulties. It is time to wipe a corps out of existence when you have ascertained that proper means have been taken to nurture and brace up that corps, and those means can only be taken from Pall Mall; they cannot be taken from anywhere else. Who can doubt that in every case in which you have the list of officers nearly complete, and the ascertained fact that the officers as you have them are more efficient than the officers of other regiments, that that is the result of the presence of a commanding officer who is capable of doing the work; or of the public spirit of a commanding officer who, knowing he cannot do the work, has given it up to allow somebody else to try; and that the cases in which you have a very low state of the list of officers must be attributable to the fact that there is a commanding officer there who either will not or cannot keep his regiment complete, but who remains there, notwithstanding the fact that the Army List, as Colonel Hale has it before him here, is a testimony to his inefficiency? I am not saying this about anybody personally; I have not looked at the Army List, and I do not know where such cases are—I tried not to remember any that Colonel Hale mentioned. I have had some experience now of commanding Volunteers; I know the difficulties there are in obtaining officers, and I know that even in those corps which have their lists full, or practically full, they nevertheless are filled by an amount of labour and an amount of struggle which ought not to be necessary. No one

who has not experienced it can have the slightest idea of the enormous labour tha is required in order to fill up the ranks of the officers satisfactorily, and there can be no question but that, if we are to have nobody as an officer in the Volunteers who is not a gentleman in high position and above trade, why then the sooner you bring the Force to an end altogether the better! And I will vouch for this from my own personal experience, that some of the very best officers in the Volunteer forces, some of the most distinguished officers as regards knowledge of their duties and power of controlling men and of implanting discipline in the corps—which is, perhaps, the most important thing of all—are men who may be are in trade. If we are going to establish the idea that nobody is to be an officer in the Volunteers unless he is the son of a gentleman, in the sense of being one who is not in trade, I say again the sooner you bring the Force to an end the better. In our days things are very much in that respect changed; in fact, not merely as regards soldiering, but as regards every other department of life; and you will find men showing as high breeding and as gentlemanly conduct among those who are in trade as elsewhere, just as you will find snobbery among your class that calls itself aristocratic. I can testify from long experience to the fact that you can get the right men thoroughly fit to handle, trained and disciplined soldiers, and able to hold their own in every way without excluding tradesmen from the range of choice. Then Colonel Hale, as usual, has suggested all the evils which exist, and has held them up as a skeleton before us for the purpose of horrifying us. He is the Carlyle of the military world: making much ado about his military demons, but himself only dancing round them, and pointing out their horrors. His *rôle* is not curative. Those of us who have had experience in the Volunteers know quite well that there are as many skeletons in Volunteer closets as there are elsewhere, and there is no harm at all in their being shown up; but I must say this to my friend Colonel Hale, that the habit of his life seems to have become criticism, and nothing beyond; he has become a stirrer of dust without showing how to lay it. I do think if Colonel Hale would sit down and really consider what are to be the remedies—not the wiping out of this corps or that, but what are to be the real remedies of this state of things—that we should get something practically useful from him. Let us have from him something constructive, and not his perpetual smashing up. I am quite convinced that the next article we see from Colonel Hale will be a scheme, and probably a highly practicable and efficient scheme, for remedying the existing state of matters. In conclusion, I am convinced of one thing, which I have expressed already, that the only remedy is to begin at the beginning and get the heart of the nation moved in regard to the national defences, and I say that not merely as regards Volunteers, but as regards our whole defences. We are a nation that sits at ease; we imagine all is well. As regards the Volunteer force, these criticisms of Colonel Hale's are just what was proposed by the owner of old in the parable, "Cut down the fig tree; why cumbereth it the ground?" A sound gardener says, "No, let me first dig round it, and dung it: and if it bring forth fruit, well: but if not, then thou shalt cut it down." What has the nation done? What have the authorities representing it really done to dig round and dung this institution, and give it vitality? Every step that has been taken has been forced upon the authorities, every step of progress that has been made has been made from without, and not a single step from within—not one that I can remember in an experience of over thirty-six years. Not a single move has been made from within by the fatherly hand in the house! All has been forced upon the father by the urgency of the children. That should not be, and the real remedy for that state of things is that the matter should be seriously taken up in Pall Mall, and that it should be seriously taken up by the nation as a nation—the question whether this Force is worth preserving. Let them say it is not worth preserving, and every one of us would be glad to resign our positions at once. It is for the nation to judge, not for us. We are

trying to do our duty; many of us do it at serious inconvenience, and great expenditure and great trouble; we are willing to do it still, but we are not willing to do it upon the footing that we must find out how to make ourselves efficient, or that you are to lay at our doors the leanness which is caused by your own neglect. You must tell us what to do, and provide the means for doing it; and if you find we cannot, or will not, do it when you have done your part, then abolish us off the face of the earth. We shall have no wish to live when the nation, having fostered us, is compelled to declare that we are discreditable defenders of its honour. But don't turn down your thumbs until you have first done your own duty.

Lieut.-Colonel W. W. BRUCE (20th Middlesex (Artists') Volunteer Rifles): Much of what I was going to say has been already well said, and I shall not repeat it. Colonel Lonsdale Hale has asked the question why young men in this country, where there are so many young men of the leisured classes, do not take commissions in the Volunteer force. In my own corps there is not this dearth of officers. We are always full up! The privates are educated men, and we select the officers from the sergeants. But in different parts of the country, I have had the opportunity of enquiring of young men why it is that they do not take commissions—young men of the class that we should desire to join—and their answer is always the same, "It is not worth my while." That is in substance the answer I get in different parts of the country—I am speaking now more of the county districts. They say, in the first place, "I should be expected to expend a certain amount of money in subscriptions, prizes, band subscriptions; and I should not object to that." They say also, in the next place, "I should have to do a considerable amount of routine company duty, and I should also have to pass some examinations; and I want to know what I get in exchange?" A Member of Parliament is not paid, but he gets a certain amount of social prestige; and the nation when it expects men to do work without pay in all other positions of life gives them a certain social position. But the officer of Volunteers does not get that position, and that in my opinion is the reason why young men of the class we desire to see among our officers do not join. It appears to me that it is for the authorities to consider how they can make it worth their while. We all know the sort of young men we want to join, and there are plenty of them with leisure and means. But they will not join, because at present there is no *quid pro quo* for the work they are called upon to do. How can that be remedied? Can the social position of officers of Volunteers be raised by any means? I think myself that a certain amount of social consideration might be given in various ways, which would have a considerable effect. We all know that in England a little social distinction goes very much farther than a £10 note, and I think that much could be done in that way. But that is for the authorities in Pall Mall to consider. I only throw out the hint, as it has been suggested to me in various parts of the country where I have made enquiries.

Captain F. H. HOSKIER (3rd Middlesex Vol. Artillery): I should like to declare myself along with Colonel Lonsdale Hale an uncompromising dynamiter! I believe this problem of the dearth of officers of Volunteers is absolutely insoluble. Nearly the whole of the time we have been discussing internal organisations and not the subject of the lecture. There are certain stock remedies always trotted out, and I am really uncertain whether any of us believe in them; we think they look rather tempting and might do some good; but the fact of the matter is that we have an extraordinary organisation in the Volunteer force such as no other nation on the face of the earth has, and we stick to it with great persistency, and try to do what we can with it. How are you to expect the upper classes to give up their dinner at a quarter to eight and to go and amuse themselves at gun drill? I do not know. It is only those who care about the thing who would do it. You get a certain number of enthusiasts in the Force who like it, and it amuses them to do the work. It may be very foolish of them, but they like it, and they go on doing it. There is another class you get in—I suppose I ought not to say it—

of the "Bun Shop" order, and they are being eliminated, I believe. That is the state of affairs. We are not really half so full of captains as Colonel Lonsdale Hale has said. When captains are short every man is immediately shunted up whom you could possibly put in the captain's place. I am sure that that must be the case in many regiments. I maintain that we are trying an impossibility, and I think the only possible way of improving the state of affairs would be to dissect the Army List and get all the skeletons and fossils away. We have a Commander-in-Chief who might start on the business and see if he cannot bring the Army List down to bed-rock. There are many men kept on the Army List to whom it is said every year, "Please don't go for another year or so, it would look so bad," and there they stop on and they would not be available for any real work. If you were to try that you could then see if it would have any impression on the public. It possibly might, but anything else I do not believe would be of any use to bring in officers. You may get a few by certain means, but good officers will get a great many more men to join than officers who have not the same influence, and who are mere "dummies."

Major E. S. COPEMAN (3rd Vol. Batt. Norfolk Regiment): In this and other lectures a great deal has been said upon the efficiency of the officers of Volunteers, and I think anything that tends to discourage that efficiency is a subject which might be mentioned at a meeting like this. An officer who is one of the senior captains of his regiment and gets his honorary majority is frequently called upon to act as a field officer in the absence of the field officers of the regiment. It is necessary, therefore, that he should make himself efficient in these duties. Accordingly he applies to his colonel for an order to attend the school. This is confirmed by the officer commanding the district, and the War Office on these recommendations admits him to the school. He spends perhaps a fortnight in preparation and a fortnight at the school. If he passes his examination he gets his certificate certifying that he has passed, and is entitled to his pay, 7s. 3d. a day. At the end of the year the War Office in looking over the account finds, by paragraph 302, that as he was not a field officer at the time he went in for the examination his pay must be disallowed, and he has got to refund it. That was the case with myself last year. It is a great discouragement to a man when he thinks he has to make himself efficient and is recommended by his colonel and the officer commanding the district for examination, that he should be shut out by this paragraph from the allowances made to the other officers obtaining the field officer's certificate at the same examination to cover their expenses. It is a small matter, but rather an important one. There are a great many men who would like to go up and qualify, but who are not able to do so because they are not yet actually appointed as field officers and available for this examination. Subalterns, on the contrary, have all the encouragement that possibly can be given them to attend school and pass for their captain's certificate in advance as soon as they join the regiment; and I think that captains, when they get high up on the list and are expected to perform the duties, ought to be allowed to go in for this examination on the same terms as the men who have already got their field officers' appointments.

Colonel ALT, in reply said: I think there is very little for me to say. The views expressed by those officers who have spoken are for the most part in accord with those I have expounded, and also with what I have suggested as necessary to remedy our shortcomings. It is impossible at this late hour to reply in detail to the many points which have been touched upon, or to analyse the respective shortage of various regiments, and find out why there is a deficiency in one regiment and not in another, as Colonel Lonsdale Hale has done. He was not quite correct in regard to my own corps. Our captains are complete, and we are not at this moment short of the number of subalterns he stated. We have two or three officers now joining, and I ought to say in this respect that I should have no difficulty whatever in filling our ranks with officers, if I adopted the suggestions

which have been let fall, viz., that we should not discriminate at all as to what class of candidate should be admitted to the regiment. I do discriminate in the corps I have the honour to command; and I do draw the line somewhere, for which reason I prefer being a few subalterns short than to have my commissioned ranks filled with men whom I consider ineligible for the position. There is one thing also which in some cases militates against the recruiting of officers as well as of the rank and file, the remedy for which is improved administration and organisation, and that is, the crowding together of several headquarters of corps. My own corps, for example, is one among six all with their headquarters within a radius of 900 yards. We have my own, the Central London Rangers; the Finsbury Rifles; the Bloomsbury Rifles; the 2nd London; the 3rd London; the 3rd Middlesex Artillery; all within that radius competing for recruits and holding out allurements for officers to join them. This is but one of the many difficulties which some individual corps labour under. I am much obliged to those officers who have expressed their accord with my views, and I take in good part the few criticisms which have been adverse to what I have laid down. I am very much obliged to you, gentlemen, for the kind reception you have given my paper.

The CHAIRMAN (Field-Marshal Sir Lintorn Simmons): I believe it is customary for the chairman at these meetings to try and sum up the opinions that have been given. These, however, have been so various on this occasion, that it is utterly out of the question to attempt it. But some observations have been made which struck me very forcibly. First, I would observe with regard to what fell from Lord Kingsburgh, as to the nation being indifferent to the maintenance of the military forces of the country. No doubt that is the case, and especially so, I think, with regard to the Volunteers, which is in great measure due to men of high position not entering the Volunteer Service. I think a remedy for this may be found in a proposal referred to by Colonel Alt, nearly in the last paragraph of his paper—namely, the ballot for the Militia. I have long held a strong opinion as to the necessity of ballot for the Militia, which is not what it ought to be. The Militia fails in many respects. It is deficient in officers, very nearly in the same proportion as the Volunteers. As regards the men, Parliament votes an establishment of 126,723 men. The enrolled force is 110,310; those present at training amounted to 97,000, of whom 31,470 were under 20 years of age, leaving a small force of 65,538 as the total effective force of the Militia, which is about one-half of the establishment voted by Parliament. I strike out the men under twenty, because they are not fit, as a rule, to undergo the fatigues of active service, even for a week. I think, therefore, that even in the interests of the Militia, it is essential that the ballot should be introduced, and I would make the ballot so that no man would be admitted into the Service under twenty years of age, and would allow of no substitutes and no exemptions or excuses, on the part of any of those who may be drawn; but exempt, as Colonel Alt suggests, those only who are serving or have served in the Volunteers, under regulations which would have to be carefully considered as to length of service, attention to duty, and proficiency. I think that the result would be that a vast number of gentlemen who ought to be patriotic enough to enter the Service would take up commissions in the Volunteers, with the view, perhaps, in the first instance, of avoiding the ballot, and who when once they have entered the Service would very likely remain in it; this might also tend to elevate the social position of the officers in some degree. I think this question of the ballot is very important, and cannot be urged too strongly. The cost of the Militia is very large, and the country is deceived in regard to it. Actually, there are only about 63,000 men effective out of 126,000, but even of that number it is difficult to say how many may have been recruits, of whom 35,148 were enlisted in the year, and had less than one year's service. I do not think you can count on them as very efficient soldiers, in case of their being required for active service. I think if the ballot were once put in force you will stir up the

energies of the country, and in that way you would reinforce the Volunteers. The Volunteers themselves have a very large number of boys in them—over 51,000 under twenty years of age—who cannot be regarded as effective soldiers; I think it would probably have the effect of forcing into the Volunteers elder men who would make more effective soldiers in the event of war. That is the principal point on which I would make any observations. I am sorry in the paper some grievances have been raised and observations made which have appeared to some officers so strong and of such a nature that, although it would have been very desirable to have had their opinions and the benefit of their experience in this meeting, they could not attend. I think this is to be much regretted, and also that some of the observations with regard to inspecting officers should have been made. Of course, inspecting officers are not all perfection. It is natural where there are a number, that some may not be as perfect as is desirable; but, as a general rule, they do their work well, and they do it with a courtesy and in a manner which is gratifying to the various corps of Volunteers. Having the honour of being an honorary colonel of a corps in the West of England, which I have had the pleasure of seeing several times, I would observe that there is a great variety in corps, as has been pointed out by Colonel Lonsdale Hale in his paper in the *Nineteenth Century*, in their position, which renders it very difficult for them to get officers. For instance, take the extreme east-end of London. I believe it is very difficult for some of the corps there to get officers. And down in Somersetshire and Devonshire the corps to which I belong has experienced some difficulties, because the regiment is scattered over a district more than 100 miles in length, which is a very serious matter. Officers, unless they happen to be in the immediate neighbourhood of the headquarters of a corps cannot give up the time to attend its meetings; but with care possibly these difficulties may be got over, and especially if the ballot were in operation for the Militia.

A VISIT TO THE LINES OF TORRES VEDRAS.

WITH ILLUSTRATIONS RE-PRODUCED FROM CAREFUL DRAWINGS MADE BY THE AUTHOR ON THE SPOT.

By Commander the Hon. H. N. SHORE, R.N.

THERE are certain things which, for reasons not easy to explain, exercise an extraordinary fascination over the mind. Such, I am bound to confess, has always been my feeling with regard to the Lines of Torres Vedras. Steaming along the coast of Portugal some three and thirty years ago, as a youngster, on my first cruise, the objects that left a deeper and more lasting impression on my mind than any others were certain forts near the sea shore, which, I was given to understand, had been built during the Peninsular war, and had even played a part in the defence of the country against the French. Ten years later I took advantage of a sojourn in the Tagus to run up as far as Alhandra, and examine that portion of the Lines which was, perhaps, more jealously guarded than any other part of those "justly celebrated entrenchments," as Napier calls them. A few hours' ramble along the crest of the scarped and fortified range of hills which extends from Alhandra to Aruda, with a distant sight of the great Monte Agraça towering up against the sky-line, its summit crowned by a monster redoubt, not only supplied food for contemplation, but intensified the desire to penetrate still further into the unexplored depths of those Cyclopean works. What greatly surprised me was their astonishing state of preservation; indeed, it was difficult to believe that nearly sixty years of rain, and storm, and neglect, had passed over these defences, so sharp and well-defined was every portion of the scarp, and so clean-cut were the embrasures. Some twenty-six years were destined to elapse before curiosity could be further gratified, but a favourable opportunity presenting itself in the spring of the year 1895, I gladly availed myself of the chance of renewing acquaintance with a beautiful and interesting country, and personally examining such portions of the Lines as were accessible from comfortable and convenient quarters.

For some reason Portugal — a hundred years ago the sanatorium for English invalids — is seldom visited by travellers, and it must be confessed the Portuguese do little to encourage the friendly invasion of summer tourists; with the result, that this charming corner of Europe is but little studied nowadays. As far as I am aware, no detailed account

of the Lines has appeared of late years, hence some description of their present state and condition may be of interest, and also serve to remind us of the momentous part these great works played in the struggle for freedom that was waged by the European States against that insatiable despot, Napoleon. From this impregnable citadel, whereon, in conjunction with the flag of England, floated the standard of Portuguese independence, there issued forth the conquering army which drove back the flood of French invasion, shattered the Imperial hosts, and, on the soil of France, dictated those terms by which Europe sought to free herself for ever from the incubus of a Buonaparte.

It is, perhaps, hardly necessary at the present day to remind the reader of the *raison d'être* of the Lines, or to weary him with a detailed account of the several works which went to make up the great scheme of defence. All this is ably summarised by Napier, and may be studied in fuller detail in the pages of Jones,[1] whose lucid and deeply interesting narrative may be commended to all who are desirous of mastering the subject. Nevertheless, as extremely erroneous ideas prevail with regard to these defences, even amongst professional men, it may not be out of place to premise the narrative with a brief description, more especially as I have come across people who picture a sort of continuous wall, like that reared by the Romans from the Solway to the Tyne; whereas, as every student knows, the Lines were mainly a series of detached works, often at considerable distances apart, constructed with a view to blocking the lines of advance of an invading army through a mountainous country, without impeding in any way the free movements of the defending force.

Nor is the interest attaching to these defences confined to the military profession alone, for, although essentially a military work, the Navy, as has so often been the case in our wars, aided in the defence.[2] A flotilla of gunboats protected the right flank at Alhandra, while the signalling duties, all through the works, were entrusted to a party of seamen under their own officers; and, but for the interposition of the Admiralty at the last moment, a large body of seamen were to have been landed from the ships in the Tagus to man the inner line of works round fort St. Julian, and thus set free a portion of the troops for active operations against the enemy.

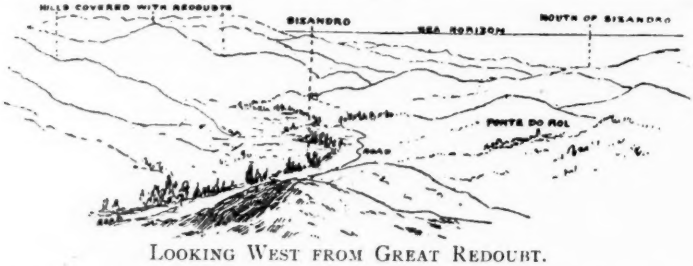
"The determination to commence these works," says Jones, "may be dated from the battle of Talavera, when it became apparent to the Duke of Wellington that the contest would, in the next campaign, devolve on the small body of veteran British and newly-raised Portuguese troops

[1] "Journals of Sieges in Spain," by Major-General Sir John T. Jones, Bart., R.E., Vol. III.

[2] Naval officers not only took a part in the defence of the Lines, but were present, as spectators, at some of the battles before and after the position was taken up. Thus, "Black Charles," who acquired fame afterwards as Sir Charles Napier, the Admiral in command of the Baltic Fleet, was present with his cousin (Sir Charles Napier, the conqueror of Scinde) at Busaco, and took part in the subsequent retreat to the Lines. Lieutenant Leith, the officer in charge of the signal stations on the Lines, was afterwards present at the siege of Badajoz.

under his command, and a defensive system of warfare ensue."[1] But to defend an extended and open frontier like that of Portugal against a superior force was, of course, out of the question; he therefore sought for a position covering Lisbon, neither to be forced nor turned, and having an assured communication with the sea, and which, being retrenched in the strongest possible manner, would offer a point of concentration for the whole of the defensive forces of Portugal. The mountains occupying the tongue of land upon which Lisbon is situated, furnished this key-stone to the arch of defence. The original notion of the Lines was derived, says Napier, from plans made under the direction of Sir Charles Stuart in 1799, together with those of the French Colonel Vincent; "but," he adds, "it was Wellington who first conceived the design of turning those vast mountains into one stupendous and impregnable citadel, wherein to deposit the independence of the whole peninsula." It was a design, as he truly remarks, "of terrible energy"; and to make it even more effective, Lord Wellington required that the people should be commanded to destroy their mills, remove their boats, break down their bridges, lay waste their fields, abandon their dwellings, and carry their property away from the line of invasion.

The works, which became known as the Lines of Torres Vedras, consisted of three distinct lines of defence.[2] The first extended from Alhandra, on the Tagus, to the mouth of the Sizandro, a distance of



LOOKING WEST FROM GREAT REDOUBT.

29 miles. The second, at a distance of from 6 to 10 miles in the rear, reached from Quintella, on the Tagus, to the mouth of the St. Lorenço, 24 miles in length. The third, intended merely to cover the point of embarkation, was carried from Passo d'Arcos, on the Tagus, to the tower of Junquera, on the coast, enclosing the fortress of St. Julian. Of these

[1] Anyone desirous of gaining an insight into the condition of Portugal previous to the French invasion, should read Beckford's "Travels in Spain and Portugal," one of the most delightful books of travel ever written; also Lord St. Vincent's trenchant letters describing the state of the Court at Lisbon.

[2] Napier's map of the Lines, besides being incorrect, is on too small a scale to be of use to the tourist; Jones' map being on a larger scale, and giving the position of all the works, will be found a better guide; it is by no means, however, a faithful record of the topographical features of the country; the course of the rivers especially being often inaccurate. Government maps are on sale at the Geographical Institute at Lisbon, and the position of all the defences that have not been obliterated are shown thereon.

stupendous lines, observes Napier, "the second, whether for strength or importance, was the principal; the others were mere appendages, the third a mere place of refuge." As a matter of fact, the first line was designed originally as a sort of advanced work to stem the tide of invasion, while the army was taking up its ground on the second line without hurry or confusion. The determination to abide the attack there was an after-thought; in fact, as so often happens with great undertakings, the form which the Lines ultimately assumed was not the outcome of any sudden inspiration—the execution of a plan which sprung complete in all its parts from the mind of its designer—but rather the result of a process of gradual development.

It is more than likely that Lord Wellington's attention had been attracted to this defensive position in the course of his previous campaign, which terminated at Vimeiro; but according to Jones, it was in January, 1809, attended by his quartermaster-general, and his chief engineer, Lieut.-Colonel Fletcher, that Lord Wellington made his first personal reconnaissance of the country in front of Lisbon, and gave directions for an examination and minute delineation of the various strong features of the ground between the sea and the Tagus, so that, when the moment arrived which he might deem appropriate for commencing the work, he should at once be able to decide on the most eligible line of defence. In the meanwhile, orders were given to form retrenched posts at Castanheira, on the Tagus, above Alhandra; Monte Agraça, and at Torres Vedras, to support the manœuvres of the army while retiring; while the defences of fort St. Julian were to be extended to cover and ensure communication with the fleet, in the event of re-embarkation being determined on.

In accordance with these directions work was commenced on the dates following, viz.: — St. Julian, November 3rd; Monte Agraça, November 4th; Torres Vedras, November 8th. The works at Castanheira were not begun till January 8th the following year (1810), but Lord Wellington, on a second personal reconnaissance of the ground, on the 10th February, following, perceiving that it was a line open to be turned, ordered these works to be filled in.

And here it may be of interest to explain how these works, covering a vast extent of country, came by the title they now bear A reference to the above dates will show that, except at Monte Agraça, a point quite out of the beaten track, and almost unknown at that time to the British, the works at Torres Vedras were undertaken three months before any other part of the Lines, "which accidental circumstance," says Jones, "added to the previous celebrity of the pass, caused their name to be given to the whole system of defence."

The labour on the works proceeded steadily till early in February, 1810, when the intentions of the French having assumed a decided character, Lord Wellington again visited the position, and after a careful inspection of the ground gave his final orders. "The object of primary interest and attention," says Jones, "was to secure places for re-embarking

the army in case of disaster, or if the enemy should advance before the Lines could be rendered of sufficient strength to make it prudent to occupy them."

The position and nature of the redoubts having been determined on, these were now pressed forward by the engineer officers with the greatest zeal and ardour. Overseers, directors, and artificers were furnished by a detachment of British infantry, the peasantry were put in requisition as labourers, and "no petty cavils about official forms of expenditure were allowed to impede the supply of materials and stores."

It was assumed that the French would conduct their operations with their usual celerity and enterprise; therefore, says Jones, "the several works of the Lines were thrown up in haste, and of a construction requiring the least labour compatible with a certain degree of strength." The redoubts were of a size to require from 150 to 250 and 300 men for their defence, and were armed with three, four, five, or six pieces of artillery. By the spring of 1810 the whole of the works were well advanced. About this time the scheme underwent some modification, rendered necessary by the course of the war, and on July 17th orders were given to strengthen still further the right flank of the advanced position, on which the forts of Torres Vedras and Monte Agraça had been established, and to throw up additional redoubts for the security of its left flank. The utmost efforts were put forth to comply with these orders; the number of workmen was largely augmented, and the young officers now, for the first time, placed in charge of extensive districts, "exerted themselves with a zeal which knew no limits, and everywhere throughout the Lines a spirit of honourable emulation proved highly advantageous to the progress of the works."

A further impetus was imparted in August, when rumours of an immediate invasion reached Lisbon. This intelligence, exaggerated as it was, had the effect of stirring up the Portuguese authorities, on whose assistance and goodwill the labour on the works was in some degree dependent. The conscription for labour was now extended to a distance of more than fifty miles around, and at one period although the middle of harvest, the workmen on the Lines were augmented to more than seven thousand. Even women and boys took their share in the labour, being paid at the rate of one-half and one-fourth the price of men. Those who have seen Portuguese women at work in the fields might be inclined to rate the value of their labour at even a higher figure! The difficulty of supplying so many with food was met by the engineer officers turning commissary and issuing rations of bread instead of an equivalent in wages. With such abundant supplies of labour, and the emulation of every one being excited to the highest pitch by the example and encouragement of the British officers, great progress was made during the months of August and September. Many new works were thrown up, while positions already defended were still further strengthened, and with such good effect, that on the 6th October, on the eve of the arrival of the advanced guard of the retreating army, the officer in charge of the works was able

to report to Lieut.-Colonel Fletcher that, "every preparation for an instant defence of the Lines is complete, and you need be under no apprehension for our credit, even if the enemy attack as the rear division enter the works." This was fortunate, for, he adds, "now everything is in confusion; the people are all running away, and a string of men, women, and children, in cars, on animals, and on foot, are crowding every road to Lisbon. No one will believe that the army will halt till it reaches St. Julian; and all authority and order is beginning to be lost."[1] Very suggestive, too, are the concluding remarks: — "When I heard of the Busaco business, I began to be alarmed for the consequences of having done so much; for if the Lines had not come into play, the expense would most likely have been cavilled at as unnecessary."

And now, at the last moment, Lord Wellington's scheme of defence underwent a further change, and took its final shape. This alteration was suggested by the course of the operations in the field, as well as by the advanced state of the season. The army entered the Lines on the 8th of October, with the expectation, says Jones, "of taking up the ground to dispute the principal passes of Mafra, Montachique, Bucellas, etc., but their movements not being pressed by the invaders, an embarrassment was felt about the points retrenched in advance, at Torres Vedras and Monte Agraça." To abandon those powerful works would certainly have produced the worst possible effects on the feelings of the troops and the population; consequently, Lord Wellington, aware of the great strength which the positions on the right of these posts had attained, and that the rains, then pouring down with their accustomed autumnal violence, must swell the Sizandro on their left flank, so that there would then only remain from the sea to the Tagus a space of about seven miles without artificial defence, decided to halt at Sobral. "And here," says Napier, "Wellington resolved to abide the attack permanently."

For further details the reader must be referred to the authorities so often mentioned in this brief *résumé*. Suffice it to add here, that on the 13th, Massena drove the allies out of Sobral, which town was abandoned to him as not being within the line of defence, and after sundry movements, the main body of the French was disposed along the front of the Lines, from Sobral to the Tagus; the advanced posts of the hostile armies arranging themselves almost in contact along the valley by Duas Portas towards Runa.

There is one particular point which calls for special notice, and that is the absolute secrecy with which the operations on these great works were carried out, and which was the more remarkable when we remember the peculiar conditions under which the operations were conducted. All this will be better understood by a reference to the interesting narrative of Jones, from which the following is extracted:—"The British officers of engineers, spread singly over a space of 150 square miles of country, and billeting themselves in the best and most convenient houses,

[1] For an appalling description of the sufferings of the Portuguese during this retreat, see the "Annual Register," 1810, page 200.

were everywhere treated with civility and kindness by the inhabitants, and a general readiness was shown by the upper classes to admit them to the familiar society of their families, which led to many sincere and disinterested friendships being contracted between the individuals of the two nations. Indeed, it is but a tribute of justice to the Portuguese gentlemen and peasantry of Estramadura to state that, during many months of constant personal intercourse, both public and private, the latter ever showed themselves respectful, industrious, docile, and obedient; whilst the former in every public transaction evinced much intelligence, good sense, and probity, and appeared in their domestic relations kind, liberal, and indulgent, both as masters and parents. Secrecy with respect to the extent and nature of the works going forward was enjoined, and it is highly creditable to all concerned that scarcely a vague paragraph respecting the Lines found its way into the public prints; and, notwithstanding the magnitude of the works, the invaders remained ignorant of the nature of the barrier raised against them, till they found the army arrayed on it to stop their further advance."

Napier tells us that Massena[1] only heard of the works five days before he came upon them, and, after spending several days in examining them, came to the conclusion that they were too strong to be forced. "The war," says Napier, "was now reduced to a blockade."

It must not be inferred, however, that further work on the Lines was suspended. On the contrary, the troops were daily employed in strengthening the positions they had taken up; more especially the valley of Aruda and that portion between Torres Vedras and Monte Agraça, which was without artificial defences. The redoubts were multiplied, subsidiary works were thrown up in connection with the larger works, and every obstacle that human ingenuity could devise and carry out was raised up as a further impediment to the invading army. Even after Massena retreated these labours were not suspended; the Lines were still regarded as the key-stone of our position in the Peninsula, and the disbursements on their account which, at the moment the army occupied the ground amounted to nearly £100,000, ran up to about double that amount before the conclusion of the war. "In 1812," we read, "when the Lines were considered as perfect as they could be made, they consisted of 152 distinct works, armed with 534 pieces of ordnance, and required 34,000 men for their garrisons." Besides which were the works to cover an embarkation at St. Julian's, which contained ninety-four pieces of artillery and required a garrison of over 5,000 men.

Apart from its antiquarian associations the town of Torres Vedras, which is now connected with Lisbon by rail, affords a convenient centre from whence to examine the western portion of the Lines. There is a good hotel here where Nature's wants can be supplied at moderate

[1] And yet Massena had Portuguese officers on his staff, a portion of the Portuguese Legion raised by Junot a few years before, and who fought under French colours in all Napoleon's campaigns, and, lastly, opposed us at Waterloo. —"Marbot's Memoirs," also "Portugal," by H. Morse Stephens.

charges, and excellent carriages and horses may be procured for making expeditions to the more remote parts of the Lines. Through the kindness of a friend, I had obtained an introduction to the civil governor of the town, a most courteous and obliging official, who offered every facility for carrying out my plans, even to the extent of placing his police-orderly at my disposal. I preferred, however, to pursue my researches unattended by this valuable public servant.

The works commanding the approaches to this important position are thus enumerated by Jones:—

—	No. of the Work.	Infantry required	Guns Mountd.	Where Situated.	
Main Work, Torres Vedras	149	250	6	Above Matacaes, to command the Runa road	
	26	300	3	Near Matacaes, to block the Runa road	
	20	470	8	S.E. Bastion of Main Work	1,720 men.
	21	270	9	S.W. Bastion of Main Work	
	22	380	9	N.W. Bastion of Main Work	
	0	600	0	S. Curtain, 150 men; W. Curtain, 90 men; N.E. Curtain, 360 men	
	23	180	7	W. Redoubt, Torres Vedras	
	24	300	7	E. Redoubt, Torres Vedras	
	25	200	2	Convent of St. Joa	
	27	500	5	Castle in the Town	

My first visit was to the main work, 20, 21, 22 (the Forte Grande de S. Vicente, as it is styled in a Portuguese map, dating from the war).

INTERIOR OF GREAT WORK, TORRES VEDRAS, LOOKING SOUTH.

This immense work stands on the Serra de S. Vicente, in advance of the town, on the west side of the pass, and on the north side of the river,

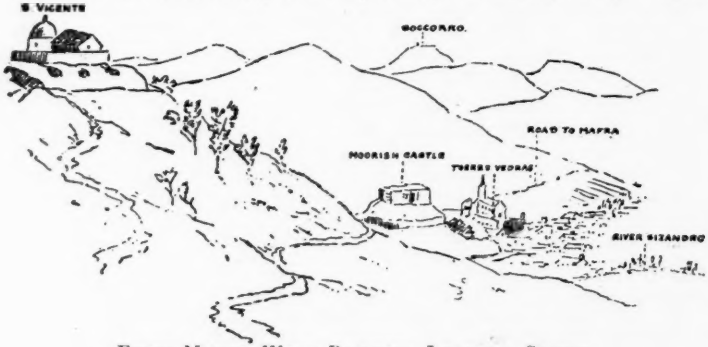
SOUTH BASTION, LOOKING WEST.

which constituted a formidable obstacle to the invading army. By a

curious mistake, Napier locates it, in his map, on the south side of the Sizandro. This work commands all the approaches from the northward

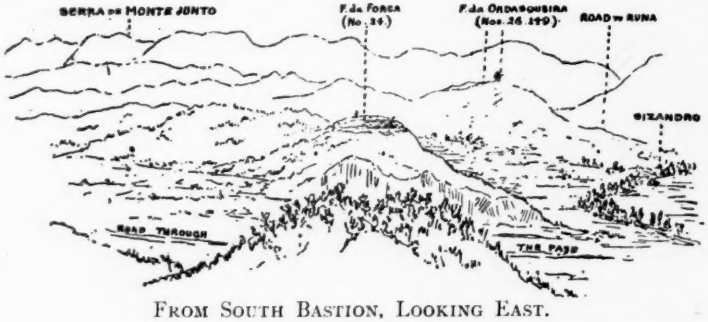
SOUTH BASTION, LOOKING SOUTH.

and westward, as well as the subsidiary works, 23, 24, 25, and 27. As it was the first undertaken, so it is probably the most perfectly finished



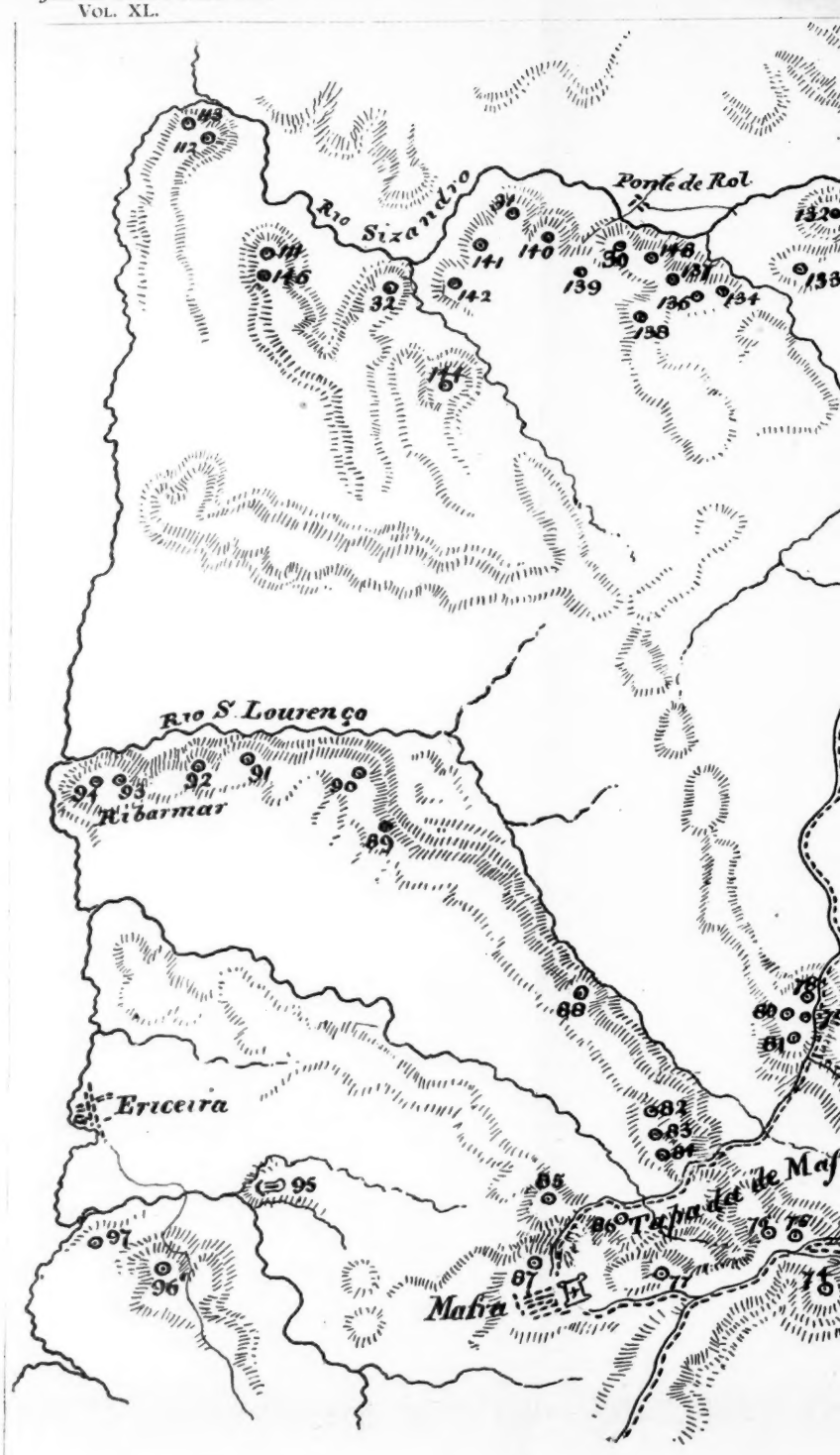
FROM NORTH-WEST BASTION, LOOKING SOUTH.

of any work on the first line of defence. On the whole, it is in a remarkable state of preservation. The ditch, which has been excavated



FROM SOUTH BASTION, LOOKING EAST.

from a sort of rotten sandstone, is further strengthened, in parts, by solid masonry; the interiors of the parapets, originally retained with fascines



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SKETCH-MAP OF THE WESTERN PORTION

Compiled chiefly from the Map of the "Lines" in Jones' "Journal of the Sieges i
mate line of route followed by the Lisbon-Leiria Railway is shewn.

Paved R
Lisbon L

The Field Works were originally numbered consecutively from East to West, the
were constructed. The Signal Stations were:—Alhandra (on the Tagus), Monte Agrac

ON OF THE 1ST AND 2ND LINES OF TORRES VEDRAS.

eges in Spain." The nomenclature is chiefly from the Portuguese Government Map. The approxi-

ved Roads as they existed in 1810-14.

bon Leiria Railway.

, the numbers as shewn on the Map supply a clue to the order (in regard to date) in which they
Agraça, Soccorro, Torres Vedras—redoubt 30 (behind Ponte de Rol).

and sandbags, were subsequently faced with good solid masonry, which still remains. The gun platforms, consisting at first, according to Jones, merely of a plank for each truck, during the summer and autumn of 1810 were all replaced by platforms of the ordinary construction; those at Torres Vedras, which are still in excellent preservation, consist of solid blocks of stone brought from a distance. The reason the bastions bear separate numbers, although parts of the great work, is thus explained by Jones:—"These interior defences and retrenchments were intended to guard against a general panic amongst the garrisons, which would necessarily be composed in part of indifferent troops. . . . Such interior lines," he adds, "to rally on, are absolutely essential to the security of a large field work." The palisades and abattis constructed out of the pine woods which once covered these heights, but were cut down to afford a clear range for the guns, have, of course, disappeared; the same may be said of magazines, which were chiefly of timber covered over with earth. The interior of the redoubt is now occupied by a vineyard, while peach and plum trees thrive in the ditch. A building, once used as a chapel, and which no doubt gave its name to the work, stands in the angle of the south-west bastion, which is further occupied by two windmills. Speaking of these erections, which are prominent features of a Portuguese landscape, Jones says:—"The small circular windmills of stone, which were frequently found occupying salient knolls, selected for the site of advanced fleches, readily converted into admirable posts as substitutes for a blockhouse or tower, placed in the interior of all well-constructed permanent earthen works." As, however, these particular mills do not figure in the Portuguese map already mentioned, they may have been built at a later date. The only portion of this great work which is absolutely ruinous, is the eastern curtain, which, having been excavated on the extreme edge of an almost precipitous hill, composed of a crumbling sandstone, has entirely fallen away. Seedling firs growing in the parapets of the bastions and acting as levers are working further destruction as years roll by.

As one gazes down on the bare, shadeless road beneath, the mind at once recurs to a passage in the report furnished by the superintending engineer, on the eve of the arrival of the retreating army. Writing under date 6th October, 1810, he says:—"The moment I knew of the army having commenced its retrograde movements, I commenced our final preparations, and we have spared neither houses, gardens, vineyards, olive trees, woods, nor private property of any description. The only blind to the fire of the works now standing is that beautiful avenue of old trees in the pass of Torres Vedras. The Juez da Fora and inhabitants pleaded to me so hard for the latest moment, lest they might be unnecessarily cut down, that I have consented to defer it till the day before the troops march in; and as I have trustworthy men with axes in readiness on the spot, there is no doubt of their being felled in time." War, alas! is no respecter of landscapes!

No. 23, or west redoubt (the Forte dos Olheiros of the Portuguese

map) is almost entirely obliterated, and only recognisable by the trace of the ditch. The centre is occupied by a windmill, which bears traces of having been loop-holed, and is shown in old maps.

No. 24, or east redoubt (the Forte da Forca of the Portuguese map), stands on a hill commanding the pass, on its east side; its principal face is turned towards the Valle do Sages and valley of the Sizandro; the position is completely commanded by the great redoubt. In a ruinous state, though the ditch and rampart still exist; now occupied as a potato ground.

No. 27; a five-gun battery constructed on the east slope of the Moorish castle, on the south side of the river, commanding the bridge (Ponte da Mintira) and causeway; still in good preservation.

No. 25; a fortified post carrying two guns, on a slight elevation, commanding the Ponte d'Rey on the Runa road. The church and conventual buildings remain; the defensive works have been levelled, and turned into a cemetery.

No. 26 (Forte da Ordasqueira); about one-and-a-half miles from Torres Vedras, on a range commanding the Runa road, and blocking the approach from the north-east. Completely obliterated; the trace of the ditch may be recognised; the site is occupied by a mill which, as it does not appear in an old map, may have been built out of the materials of the fort.

No. 149. As No. 26 only partially commands the ground to the eastward, which, moreover, acts as a blind to its fire, this work was thrown up after the troops entered the Lines, by working parties from the regiments near at hand. It was established, says Jones, "more completely to interdict the use of the road through the pass of Runa to the invaders." This work is in a remarkably perfect state, almost as left; the ditch, interior of parapet and embrasures have been faced with stone in a very substantial manner, and only here and there has a block been removed for other uses. The work appears to have mounted sixteen pieces, though Jones only gives the armament as seven!

The river Sizandro from Torres Vedras to the sea, a distance of about 7 miles, was defended by a series of minor works constructed along a range of moderate height, commanding the valley of the Sizandro. Many of these redoubts are easily distinguishable from the great fort at Torres, breaking the contour of the hills, or cutting into the sky-line. Most of them were constructed after Massena's retreat, in the spring of 1811; and at the same time, the left bank of the Sizandro was scarped "to compensate the fall of water and preserve the equilibrium of defence." (Jones.)

The chief defence at this part of the Lines, after the rains had set in, was to be found in the Sizandro, which then formed an impassable marsh. Obstructions were created at points under the fire of the works to the flow of the current, so that when the autumn rains set in, which happened the day after the advance-guard of the army entered the Lines,

the river, we read, "overflowed its banks, and in a short time more than half the valley became so complete a bog, that no reward could induce any of the peasantry to attempt to pass over it." The river, when I saw it, had receded to its summer limits, and was, as described by Jones, "an insignificant stream," a few inches only in depth.

The position from Torres Vedras to the sea was held by the 3rd Division, under General Picton, whose headquarters were fixed at the former place. The period of their sojourn here must have been an uneventful one, as this part of the Lines was never even threatened. If the vintage of the previous year had been a good one, we may picture the British soldier of the period revelling in the delicious wines of Torres after the long and arduous retreat from the frontier!

From Torres Vedras to Sobral and Monte Agraça.

This drive, of 11 or 12 miles, through a beautiful tract of country, embraces, perhaps, the most interesting portion of the Lines, for it was here that the outposts of the opposing armies were almost in contact; the villages of Runa, Ribaldiera, and Zibriera being occupied respectively by the 6th, 5th, and 4th divisions, under Generals Campbell, Cole, and Spencer.[1] These picturesque places are all on the line of road, and probably present very much the same appearance as when occupied by British troops; for things change slowly in Portugal. The redoubts, 130, 129, 128, 150, and 151, may be distinguished towering up against the sky-line on the heights at the back of these villages. The following remarks on the situations of these works, from the pen of Sir John Jones, are worthy of note:—"Many of the redoubts were placed on the summit of very steep hills, which gave them a most imposing appearance; but it was really a defect highly prejudicial to their efficiency and defence. . . The domineering situation of the redoubts, however, gave confidence to the young troops which composed their garrisons, protected them from a cannonade, and screened their interior from musketry." Most of the works above numbered were thrown up by the men of the divisions quartered below, after the Lines had been occupied.

The little town of Sobral is of special interest, for it was here that the only serious fighting, on the Lines, took place, and in which the 71st Regiment greatly distinguished itself. Here it was that Massena and Wellington faced each other for some days,[2] the allies animated with the hope that the French would "come on," and give them a chance of repeating the Busaco lesson. "Every morning, two hours before day-break," says Jones, "the troops stood to their arms at the point of assembly of their several cantonments, as did also the garrisons of the

[1] Sir Walter Scott mentions having received a letter from a captain in an infantry regiment, near Torres Vedras, who, while waiting for an attack by the French, excited the martial ardour of his men by reciting aloud a canto of "Marmion," which had just appeared, and given great delight to the poet's admirers.

[2] It was here the humorous incidents related by Baron de Marbot were supposed to have taken place.

several works; Lord Wellington, in person, being in the fort of Monte Agraça, in readiness to direct any general movement, according to the exigencies of the moment." As soon as it was ascertained that the enemy

LOOKING SOUTH FROM THE SOBRAL ROAD.

manifested no desire to attack, the troops were dismissed, and at once resumed their daily labour on the works. "The weather," adds Jones, "was generally wet, and the duty irksome; still, all supported it with cheerfulness, in the full confidence of annihilating their opponent, whenever the threatened attack should take place; but after a week had elapsed, expectation would no longer support itself, and the hope of an immediate and brilliant triumph subsided." The rest belongs to history.

It is said that Junot[1] pressed for an immediate assault on the great redoubt, but wiser counsels prevailed, and the wave of invasion recoiled beaten and baffled. It must have been especially aggravating to the French troops, for, buoyed up with the prospect of looting Lisbon, they had come on destitute of almost every necessary, and of course suffered great privations.[2]

One can imagine the inward satisfaction with which Lord Wellington would watch the slow development of the effects of his grand scheme—so well thought out, so admirably executed by zealous and devoted subordinates; for however desirous he may have been to receive an attack, conscious of the almost certain success of his plans—and he was never slow to sacrifice men when the objects to be attained were absolutely essential to the success of his schemes—he cannot be said to have ever needlessly risked an action, or to have sacrificed life for the mere love of fighting; his caution, his patience, nay, his humanity, and his marvellous power of self-control under circumstances which might well have tempted a weaker man to risk something on the chance of winning a brilliant victory, were admirably exemplified in the calm and dignified letter he addressed to the Secretary of State, the Earl of Liverpool. Writing under date 27th October, 1810, he says:—"I am not quite

[1] This distinguished general had made such a "good thing" out of Lisbon on his last visit, that it is easy to understand his hurry to get back there.

[2] See letter from Massena to Berthier (Coimbra, October 4th, 1810). Also "Marbot's Memoirs."

certain that I ought not to attack the French. . . . . but I think the sure game, and that in which I am likely to lose fewest men, the most consistent with my instructions and the intentions of the King's Government; and I therefore prefer to await the attack."

From this check in front of the Lines may be dated the decline of French power; as Jones truly observes—"It was the first and only instance of a military enterprise planned and matured by Napoleon, whilst in the plenitude of his power, being defeated by the steady perseverance and superior foresight of an opponent." This failure "gave a fatal blow to the general belief of French invincibility, and taught oppressed Europe to resist and become free."

The great work on the summit of the Monte Agraça towers up some 1,200 feet above the town of Sobral, the embrasures being easily distinguishable; while the minor, and subsidiary works, afterwards thrown up, Nos. 16, 17, 15, 152, 12, and 13 may be observed breaking the contour of the lower spurs of the mountain, the whole creating the impression of a position of enormous strength, not lightly to be interfered with.

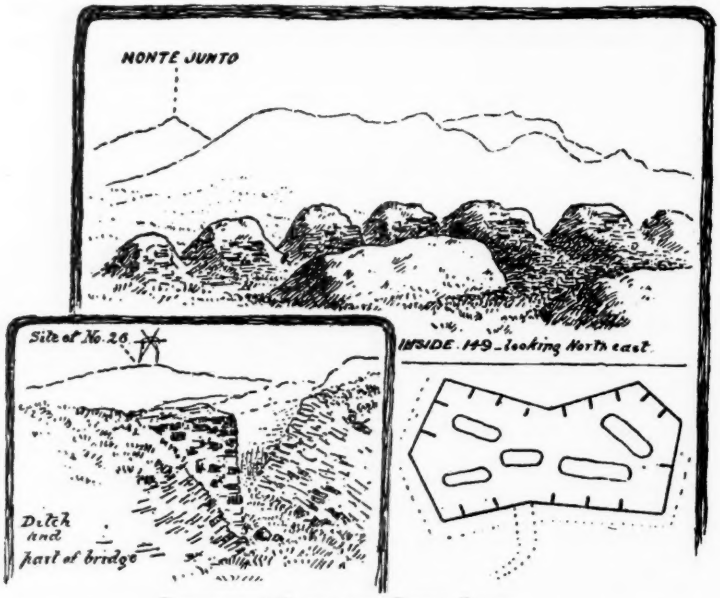
"The paved road," mentioned by Napier, as "running parallel to the foot of the hills"—a singularly inapt description of this particular causeway—has long been superseded by an admirably engineered road, with gentle gradients, which intersects the older one at many points, and thus gives the traveller an excellent opportunity of examining the identical tracks along which British troops marched, and artillery rumbled in the old Peninsular war days.[1]

From every part of the road may be observed the lofty Monte Junto, rearing its crest against the sky-line, to the northward, and possessing an interest which might not otherwise attach to it, owing to the important part it played in the disposition of French troops, before the Lines.

The return journey, through the picturesque little village of Runa, affords a good opportunity for visiting the fine hospital for old soldiers of the Portuguese Army. Here, in an imposing and admirably-arranged building, standing in the midst of large and beautifully laid-out grounds, with abundance of fruit and other trees, and bright with flowers, thirty pensioners, whose qualification is many years' service with the colours, without a mark against them, are supported at the expense of the State in comfort, if not in affluence. Our party were received here with the utmost cordiality, conducted over every part of the establishment, invited

[1] That locomotion on these rackety causeways was not incompatible with speed is shown by the author of "Vathek," writing under date, July, 1787, describing a midnight ride from Cintra to Lisbon in a carriage-and-four, he says:—"In less than an hour we had rattled over twelve miles of rough, disjoined pavement, going up and down the steepest hills in a convulsive gallop, so that I expected every instant to be thrown flat on my face; but, happily the mules were picked from perhaps a hundred, and never stumbled. The pages riding full speed before us with flaming torches, and the wind driving back sparks and smoke full in our faces, I was stunned and bewildered, and experienced, perhaps, the sensations of a novice in sorcery, mounted for the first time behind a witch on a broomstick."—(*Travels in Spain and Portugal by the author of Vathek*, W. BECKFORD.)

to sample the provisions, both cooked and uncooked, and shewn the palatable and tempting mid-day meal just set out for the inmates. Excellent soup, a savoury-looking mess of meat, a plate of Loquots, and a glass of capital red wine made up the mid-day banquet. The inmates were a fine body of men, well cared for, neatly clothed in an easy military uniform, and looking happy and contented with their lot, as, indeed, they might well be, for more than one of our party felt that there might be worse endings to an active life than that of a Runa pensioner! Although



REDOUBT 149, ON THE RUNA ROAD.

one hears little of the achievements of the Portuguese Army at the present day, it is impossible to forget that Portuguese troops fought side by side with our own all through the Peninsular war, and, in the opinion of many experienced officers were almost equal to British soldiers, when properly led; while for good conduct in the field and amenableness to discipline they may be held up as an example to all nations. In proof of the inherent bravery of the race, may be cited the fact that, in every contest with their huge neighbour they have always come out victorious, and succeeding in preserving their independence. Nor does the companionship in arms above referred to date merely from the Peninsular war days; it commenced in the year 1147, when a body of English Crusaders landed at Lisbon, and assisted in driving the Moors out of the castle of St. George. And this friendly assistance was renewed on many subsequent occasions, to the mutual advantage of both nations. For this reason Englishmen must always feel an interest in the Portuguese Army, and look with a kindly feeling on its old soldiers.

The little village of Pero Negro, where Wellington fixed his head-quarters, is a few miles off the Runa and Sobral road, to the southward. it was selected, probably, not only from its central position and close proximity to the part most open to attack, but owing to the facility with which communication could be kept up with every part of the Lines, from the summit of the Soccorro[1] mountain, which overhangs the village, and

THE SERRA DO SOCCORRO FROM ABOVE THE VILLAGE OF GRADIL, ON THE MAFRA ROAD.

on which was erected a telegraph in signalling connection with all the principal points. These telegraph stations, which played so important a part in the scheme of defence, were early decided on, and were five in number, viz., Alhandra, Monte Agraça, Soccorro, Torres Vedras, and redoubt No. 30, about half-way between the latter town and the sea. The signalling apparatus consisted of a mast and yard, from which balls were suspended, and the stations were worked by a party of seamen, under their own officers, furnished by the fleet in the Tagus. So expert did they become after a little practice, that signals were passed from one end of the line to the other with undeviating accuracy, in seven minutes. It is not a little suggestive to find how entirely dependent the army was on the fleet for signalling, in those far away times.[2] We have certainly moved on a bit since then! Jones, to whom we are indebted for these particulars, does not state if any means existed for night signalling. There is one more point deserving of notice in connection with the Soccorro mountain, and that is the curious way in which it seems to search out every position along the first line; in the most unexpected

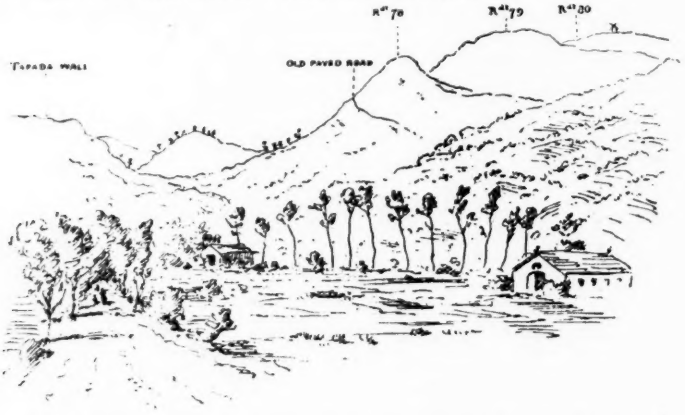
[1] Napier calls this mountain "Secora," Jones calls it "Socorra," both of which are meaningless; whereas in Portuguese maps it is spelt Soccorro, which being interpreted means "Succour" or "Relief," a singularly appropriate title.

[2] The signalling parties appear to have taken up their posts as early as July, 18th, 1810. In September, when there was a rumour of the withdrawal of the seamen, the commanding engineer writes:—"Taking away the seamen from the signal posts will be a misfortune, as they have just become thoroughly expert at passing the signals. I think that a non-commissioned officer and two privates might be selected from Lisbon for each post, whom we could trust to pass the signals; but I do not think we could ever teach the Portuguese, and even with soldiers I am not very sanguine in my expectations of rendering them very expert."

places this conical-shaped mountain, with its shining white crown of buildings, protrudes itself over the adjacent country, and forces itself into notice.

Torres Vedras to Mafra.

This drive of about 17 miles through a beautiful and diversified country, comprising the fine mountain scenery around Mafra, affords an excellent opportunity for examining the most rugged and jealously-guarded point on the second line of defence—the pass of Mafra, through which the main road from Torres Vedras to Lisbon runs.



Entrance to the Mafra Pass, from the North-East.

The pass was defended by a system of fourteen redoubts, constructed "with peculiar care and considerable labour"; while in front was the Sierra de Chypre which obstructed all approaches to Mafra itself, and was covered with redoubts. Most of these works were established on commanding heights of considerable altitude, and being somewhat difficult of access, and likely to require more time than could be spared, I contented myself with visiting redoubts 78, 79, and 80, on a commanding spur of the Chypre, immediately overhanging the village of Gradil, and effectually blocking the paved road which passes about two hundred feet below, within a stone's throw. These works, mutually dependent on each other, are of small size and in a ruinous condition. No masonry appears to have been used in their construction. It is probable that when the first line was occupied permanently, it was thought unnecessary to strengthen these works in the solid manner adopted for the redoubts of the outer line; and we know that the rains of the first winter played havoc with the slopes, even converting some of the works into reservoirs!

The more one sees of these works, the more one wonders how the extraordinary difficulty of dragging guns up to such elevations over roadless mountains was overcome; some remarks on this head by the authority so freely quoted are worth repeating. Jones says:—"The provision of artillery, ammunition, and stores, was arranged by the Portuguese in the

arsenal at Lisbon, as the works were prepared to receive them. It was gratifying to observe, on these occasions, by what persevering and patient labour the peasantry, with their rude means of transport, merely the common cars of the country pushed forward by oxen, succeeded in transporting 12-pounders into situations where wheels had never before rolled, and along the steep sides of mountains where horses would have been useless." This writer further pays a generous and well-deserved tribute to the Portuguese officers and men employed on this arduous service :— "The zeal of the Portuguese General Rosa smoothed all difficulties, and his activity and resource seemed to render the supply of guns, ammunition, and the means of transport inexhaustible. The Portuguese officers and gunners employed on this duty were also zealous and active, and took extremely good care of their stores and ammunition." Lord Wellington, also, pays a just tribute to those patient and persistent workers, the Portuguese oxen, which undoubtedly played a more important part in the construction of the Lines than they are usually credited with. "They will be slow, but very sure"; such were his words!

From the point already mentioned, the road dips into a deep gorge, perhaps a thousand feet below, where it crosses the head of the St. Lorenço river, and where every sort of obstacle was prepared, still further to impede the advance of the enemy. From here, the old paved road, in its hurry to reach its destination, runs almost straight up the steep mountain side, outside and parallel with the high wall of the Tapada, or Royal Park of Mafra. The modern road, a fine piece of engineering, with gentle gradients, up which a carriage and horse can trot all the way, is taken in more leisurely fashion, zig-zag up the face of the mountain, affording magnificent views of really fine scenery, and impressing one with the tremendous strength of the position. The Tapada, which extends over a wide tract of country, occupies the ground to the left; its pine woods supplied the greater part of the trees used for the palisades and abattis, and other purposes in connection with the defences.

Of Mafra and its glories I cannot speak here; are they not described in many guide-books?

The Ericeira, Cintra, and Lisbon Road.

To secure the left of the Mafra position, a retired post was established at Carvoiera, on the left of the Chileiros valley (redoubts 96 and 97), to command the only coast road between the places above mentioned, in its descent of the north bank of the river. No. 95, on the right of the valley, co-operated in these objects.

I took the opportunity of examining this position in the course of a drive from Cintra to Ericeira, a distance of about 15 miles, across a most dreary, uninteresting plain. The old paved road—if such there was—has quite disappeared, and is replaced by an excellent modern one, which is carried across the valley of the river Chileiros by a raised causeway and bridge. The works erected for blocking this point have almost disappeared; 95 is the most distinguishable. Like the other works on the second line, these were probably left in their original condition without further strengthening.

Ericeira is a dull, uninteresting little fishing town, and, with its surroundings, scarcely repays the trouble of a visit.

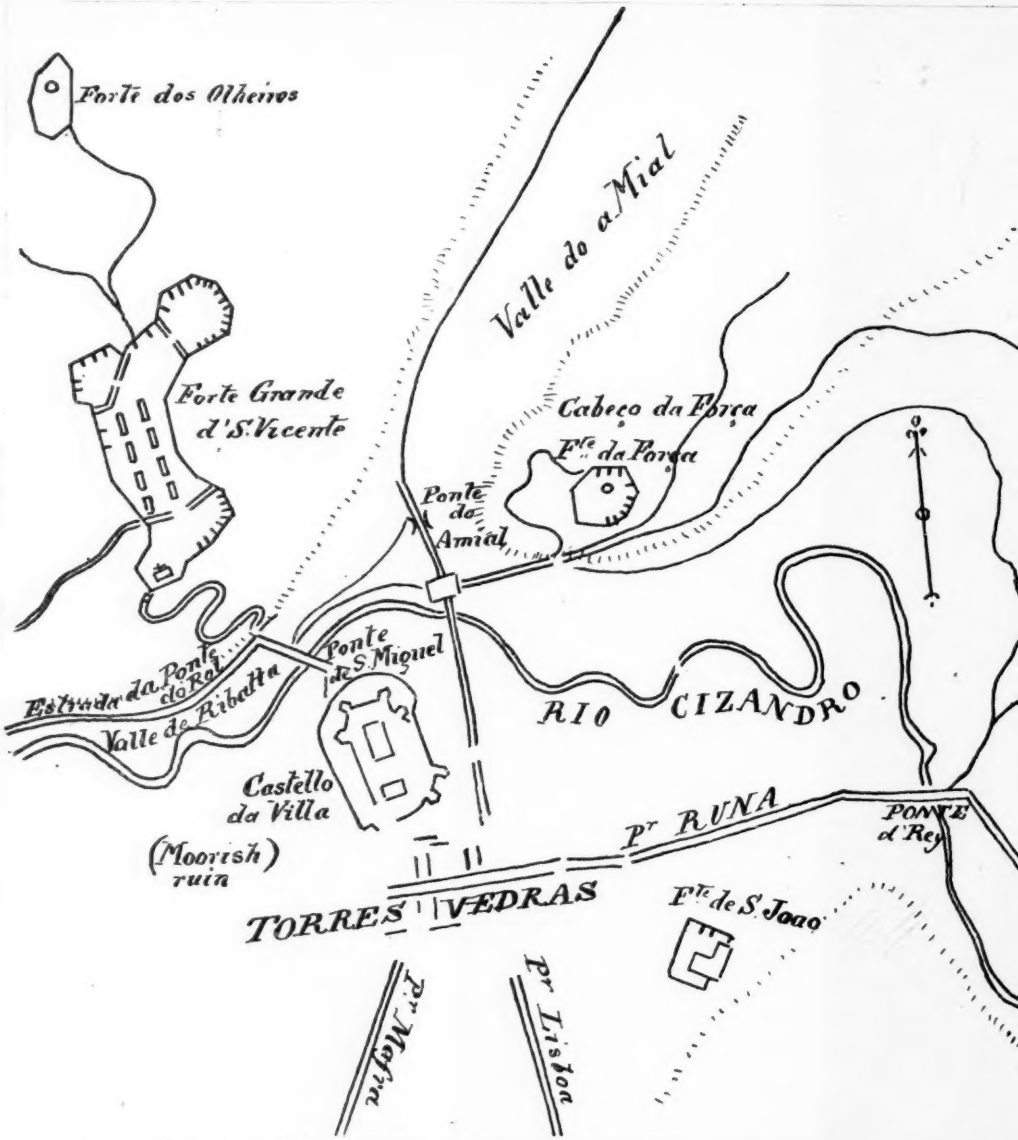
The St. Julian Lines.

These may be visited from Lisbon by train; they are quite distinguishable, though mostly ruinous. As they were never used, they scarcely possess the same interest as the outer lines; the same may be said of those at Almada, on the south bank of the Tagus, erected at the eleventh hour, in consequence of Admiral Berkeley's discovery that, contrary to what he had previously affirmed, the fleet could not lie in the river if this position was in hostile hands. The Almada works were never completed.

For those who are desirous of examining the line of Lord Wellington's advance in the brief campaign that terminated at Vimeiro, every facility is offered by the recently-constructed railway from Lisbon, by Torres Vedras to Leiria. Batalha, Alcobaça—names familiar to the student of military history—are but a short distance off the line, while from Caldas, the railway almost follows the road of advance, through Obydos, and even affords a view of the battle-field of Roriça; passing thence due south to Torres Vedras—leaving the battle-field of Vimeiro about 6 miles to the right, and then over ground occupied by the troops who held the Lines, viz.:—Runa, Duas Portas, Pero Negro, and Malviera, where the train pauses long enough to enable one to get a good sight of the redoubts 65, 66, erected on conical hills overhanging the line, at the mouth of the pass, and thence on to Lisbon. Railway travelling in Portugal is a delightful way of seeing the country, and enjoying scenery; no rushing along at lightning speed, without stops, but an agreeable sort of jog-trot, with plenty of time at the stations for taking a stroll or making sketches; for studying the natives, or contemplating the landscape. If the traveller prefers to drive, carriages and excellent horses can be hired at an extremely low rate, and Portuguese main roads are well engineered, admirably kept up, and, what is of more importance in this sunny climate, are often carried for miles under shady avenues of beautiful trees.

English people flock to the field of Waterloo, and to the scene of many struggles of the Franco-German war, but a visitor to the Lines of Torres Vedras is almost as rare as a New Zealander on the Thames embankment; and yet there are few objects of more profound interest to English people than these "justly celebrated entrenchments." It is no disparagement to our gallant allies to say that without English aid and English gold, these grand works would never have sprung into existence. English brains designed them; English energy and skill carried them out; and although the actual labour of raising them up was mostly native, these defences are every bit as English as the great works which the Romans left behind them as a mark of their four hundred years' occupation of our land are Roman—works raised up by native labour, under skilled foreign direction. They are a lasting memorial to the tie which bound the two nations together in the tremendous struggle for European freedom waged during the early years of the century.

The great services which England rendered in times past to the little



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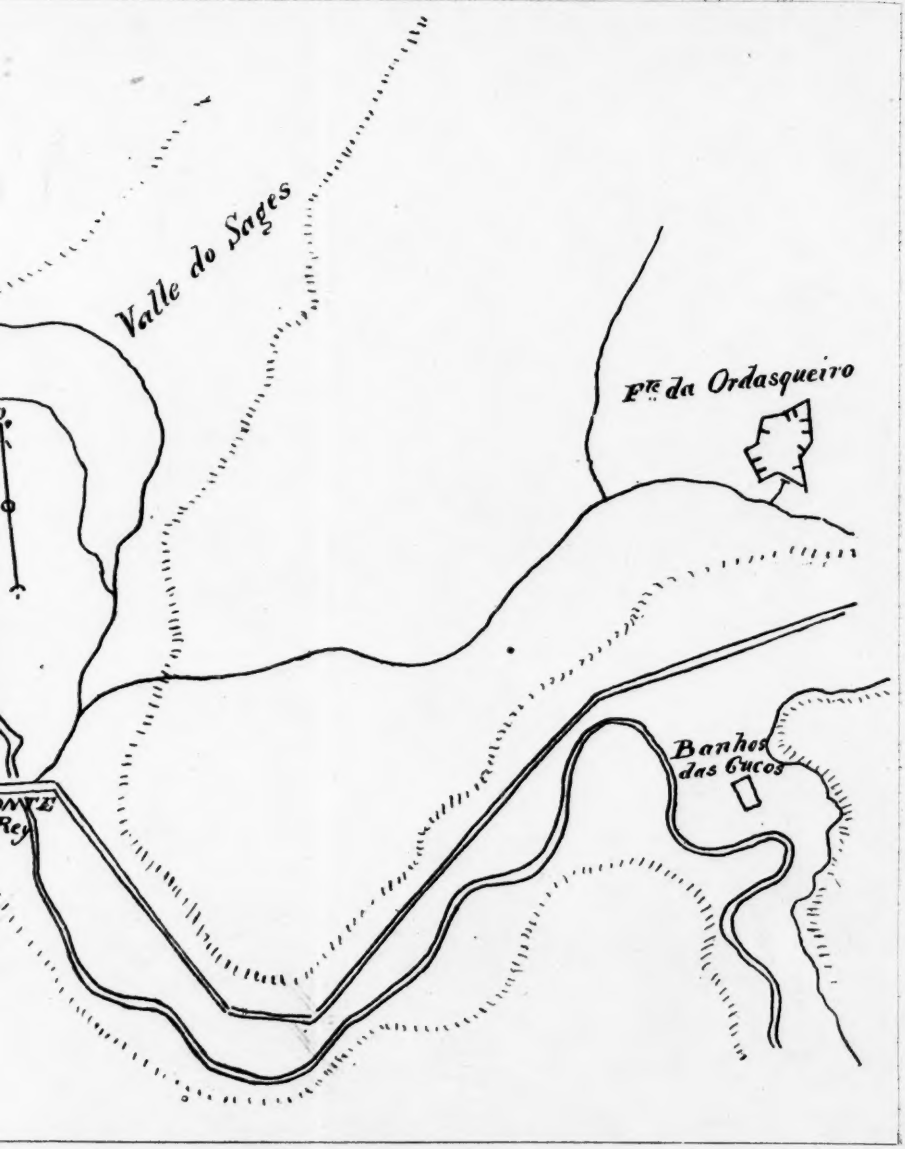
SKETCH-MAP SHEWING THE DEFENSIVE WOR

(From a Portuguese MS. Map of a



E WORKS AROUND TORRES VEDRAS.

. Map of about 1815.)

kingdom of Portugal are, alas, too apt to be ignored by the present generation, but there are still intelligent Portuguese who admit the debt their country owes to us, and deeply regret the present estrangement between the two nations. If in years to come these services are denied or forgotten, may we not point to the Lines of Torres Vedras and quote the words applied to another great memorial, "si monumentum requiris circumspice"?[1]

One word more: visitors to Lisbon should not forget to visit the arsenal museum, which contains some extremely interesting specimens of ancient ordnance, from India and other foreign Portuguese possessions, gathered together in times gone by; amongst which may be mentioned some breech-loading cannon of great antiquity, and especially the great brass gun, 20 feet in length, known as the "cannon of Dio," which was sent home from India in 1536, and bears a lengthy Arabic inscription. There are also some interesting trophies of the Peninsular war, in the shape of four field guns, bearing the following inscription:—"Captured by the Portuguese Army at Vittoria, 21st June, 1813." It has always been supposed that some British troops were engaged on that memorable occasion; which only shows how carelessly military history is sometimes compiled![2]

[1] In consequence of the terrible sufferings of the Portuguese peasantry caused by the devastation of their country during the retreat on the lines, "A very powerful sympathy with them was expressed by the British legislature and nation. The House of Commons voted for their relief £100,000, and a sum at least equal to this was raised by voluntary subscription. And this money was very judiciously employed in the purchase and freightage of such things in this country as the Portuguese were in most immediate want of." ("Annual Register," 1810, page 201.) And yet a paper published in Lisbon, of considerable circulation and some influence, was not ashamed, on a recent occasion, to refer to the English nation as "that nest of pirates who have never come to Portugal without carrying away far more than they gave!" While a distinguished French authoress has recently published a work on Portugal, full of abuse of England and the English, in which she constantly refers to us as the worst enemies of the Portuguese, and then dedicates this amiable volume "To the youth of Portugal." Her object is to prove that the true friends of the Portuguese are, and ever have been, the French! Such is history!

[2] How completely misunderstood was the character of the British soldier in the Peninsular war was curiously exemplified at Corunna, where, so we are told by Jones—"nearly to the conclusion of the war, the inhabitants (particularly the ladies), when speaking of the British, after eulogising their appearance, etc., invariably concluded by exclaiming: 'what a pity such fine, well-looking men should be afraid to fight!'" Although the generation that witnessed the war has probably passed away, the diligent inquirer, with time at his disposal, and some command of the Portuguese tongue, might still gather up some curious reminiscences of the British occupation. A romantic story relating to General Sir Harry Burrard is still current amongst English residents at Lisbon. It appears that as this distinguished officer was riding along the country roads, soon after his arrival, on passing each group of countrymen with their donkeys his ears were greeted with the cry of "Ar-r-r-é Bur-r-r-o!" (pronounced rather like "'Arry Bureau"). At length, overcome with surprise, he turned to one of his staff—"D—n it, most extraordinary thing how they all know me!" It must be explained that the cheery greeting which so delighted the general is equivalent to our "gee-up donkey!" This episode seems to have escaped the notice of historians!

NOTES ON THE DEFENCE OF THE BAY OF ALGECIRAS.

Translated from the "Memorial de Artilleria" (published at Madrid).

I.

NO fortress needs so much attention as that of Algeciras. Situated opposite to and at some 8,900 yards from Gibraltar, one sees with humiliation and deep sorrow rising out of the sea a small patch of Spanish soil, which was torn from the very heart of the country on the unfortunate 24th July, 1704.

This rock is to-day a thickly populated and fortified city, on which the English have impressed the stamp of their civilisation and progress.

The features of this cosmopolitan and picturesque city are good hotels, carefully-kept gardens, well-supplied shops, theatres, police, comfortable houses, and a garrison of from 5,000 to 6,000 troops, who look upon the Spanish people more or less as if they were Indians. Its very prosperity makes us blush with shame.

It possesses two moles: the old mole in shallow water, near to which is the coal supply stored in hulks anchored at from 850 to 1,100 yards from the town; and the new mole, whose length will extend to more than 1,100 yards with a depth of water of from 8 to 10 fathoms, thus permitting any man-of-war to come alongside. It provides workshops for repair, abundant stores, two iron foundries, means of embarkation and disembarkation, and all that is necessary for a place which has dealings with all the world.

The annual sale of coal to ships amounts to half-a-million tons; on an average 6,400 vessels, with a tonnage of more than 5½ millions, enter the harbour.

It has constant communication with Algeciras, Tangier, and Malaga, and very frequently with the most important ports of the world.

Situated on the east mouth of the Strait it is for England, the possessor of a powerful fleet, the key of the Mediterranean. It forms with Malta an exceptionally good base of operations, giving her the predominance in this sea, which is the mother of civilisation. If she were to abandon or lose Gibraltar her influence on the destinies of Europe would be of less weight; her alliance, in the highest estimation to-day,

would in the event of a conflagration lose its value, and her position as a nation of the first class would not hold the eminent place which it now occupies in Europe.

For this reason we consider that the idea that Great Britain would agree to cede the Rock to us, however much its up-keep may cost her, is a mere illusion pleasant to Spanish hearts. In the proud people of that nationality there is a consciousness of the place they ought to occupy, and they would judge the loss of a position of primary importance in the Mediterranean as the beginning of inevitable decay.

In this sea, France—her eternal rival in history—possesses the magnificent military port of Toulon, Italy that of Spezia, whose broad bay surrounded by mountains is solidly fortified; and it is not to be thought for a moment that powerful Albion, prosperous, rich, and accustomed to rule the waves, would voluntarily resign herself to a diminution of her sway.

Gibraltar produces nothing and consumes everything, it is a free port into which comes merchandise of every description; the same being introduced into Spain, though very often in a fraudulent manner.

The market is supplied by the Spanish towns in the neighbourhood, to which it is an element of life and relative prosperity.

Its history dates from remote ages. Monte Calpe formed with Ceuta the legendary columns of Hercules, the *ne plus ultra* of the ancients; here the Berber Gibel Tarik disembarked during the Moorish invasion, and from him it takes its name. United to Spain in the last period of the reconquest, it was fortified by Charles V., who feared the attacks of the Corsair Barbarroja, and we were its possessors until the War of Succession, when, almost ungarrisoned, in 1704, it was occupied by the English in the name of the Archduke Charles. Although it should have been restored at the Peace of Utrecht, England appropriated it to herself, and it has since remained in her possession after having resisted two sieges in 1727 and 1779 without result as far as we are concerned.

That nation has spent enormous sums in making titanic works of the fortifications and in rendering habitable an inclement rock, where water is wanting, the climate is unhealthy, soil unfertile, and sun scorching; but by dint of patience and money they have brought it to the condition in which we see it now.

Its shape is prolonged in a north and south direction, its crest running in that line. The town lies at the north end of the lower part of the slope facing Algeciras Bay. At the south is Europa Point. On the west, overlooking the bay, are the two moles, old and new, Rosia Bay, that of Europa, and it may be said the whole life of Gibraltar. On the east side there is nothing but Catalan Creek and Sandy Bay.[1] Here the Rock, lashed by the wind, is uninhabitable, its soil sterile, and its climate severe. Gibraltar has a population of 24,000 souls, including a garrison of some 6,000 or 7,000 men. Its greatest height is 1,410 feet; its length, including part of the neutral ground, which, belonging to them, the

[1] Salto Garrobo.

English occupy, is 5,100 yards. Its circumference is about six miles and a quarter, and its greatest breadth in the northern part facing Spain is 1,400 yards, diminishing towards Europa Point, where its breadth is scarcely 550 yards.

Coming from Spanish territory one sees conspicuous on the Rock, here precipitous and inaccessible, the famous casemated works cut in the rock, and known as the Windsor and Union Galleries; these form two vaulted lines of great length. They were commenced during the siege, with a view of flanking the neighbourhood of the Rock, but their great height leaves a considerable dead space. These casemated galleries extend through Willis Battery and through the front of the Rock facing the bay; they possess staircases in spiral communication with the fortifications on the crest. The length of the Galleries is more than 2,200 yards, and they have sufficient room in them to shelter all the troops in case of war.

Fighting in these casemates would present serious difficulties, because the thickness of the Rock wall would not suffice to resist the impact of projectiles of large calibre, and their gradual blowing away would be destructive to *personnel* and material. The very vibration caused by the blast of firing in the emplacements cut in the rock and in the two rows of galleries have often given rise to doubts of its solidity, and, if we add to this, that want of air and ventilation makes working in them difficult, it is easy to see that the use of this part of the Rock for the construction of galleries in its interior will not admit of guns of large calibre being mounted, nor will such a course assist the defence of Gibraltar in any important particular, though such cuttings may be used with advantage as barracks. Nevertheless, the batteries placed on the crest are of the greatest importance, its height being from 1,310 to 1,410 feet, and its length 2,200 yards.

Strangers are not allowed to visit the fortifications on the heights, but three principal works can be made out on the northern, the central (known as the Hacho or signal station, where the morning and evening guns are fired), and the other on the southern summit, viz., O'Hara's Tower, which takes its name from the General who erected it in order to watch the movements of fleets; here modern batteries are visible. The command which this height gives over the bay and all surrounding eminences forces us to acknowledge the advantages of the position for commanding by its fire Algeciras Bay, and for cannonading the villages within reach of its guns in the country round Gibraltar, such as Algeciras, Palmones, Orange Grove, Campamento, Tunara, and Linea; our country would be at the mercy of the enemy were the English to occupy Queen of Spain's Chair under the protection of the Gibraltar guns.

The three forts on the ridge of the Rock, Boca Negra[1] on the north, the signal station in the centre, and O'Hara's Tower on the south, are, therefore, the most important and extensive defences of Gibraltar.

[1] "Rock Gun."

Fortunately, these high defences leave a considerable space without fire; their fire is excessively confined, and little can be made of the site for the emplacement of guns. Numerous but less-important batteries defend the lower part of the Rock. On the western side are Kings and Jumpers Bastions, those of Rosia and Europa Bay, and facing the east those of Europa and Sandy Bay.

The ordnance mounted is of two epochs, viz., muzzle-loaders of 9-inch, 10-inch, 12-inch, and 17·7-inch, and the newly-mounted breech-loaders which arm the more important and modern batteries on the top of the Rock. The smooth-bore 62-pounders[1] and 32-pounders, which are still to be seen in Gibraltar, should not be taken into account, because of their slight defensive importance; but it would be wrong to deduce from their presence that the English may not at last have mounted pieces of more advanced types.

The following table gives the ballistic properties of the existing armament:—

MUZZLE LOADERS.

Calibre .. .. inch.	17·7	12·5	10
Weight .. .. tons.	100	38	18
Projectile .. .. lbs.	2,204	811	407
Real weight .. .. lbs.	*2,000*	*818*	*410*
Velocity .. .. f.s.	1,525	1,640	1,351
Real velocity .. .. f.s.	*1,548*	*1,442*	*1,379*
$\frac{P.v^2}{2.8}$ .. .. f. tons.	32,152	13,848	5,324
Real muzzle energy .. .. f. tons.	*33,253*	*11,823*	*5,406*
Penetration wrought iron at 1,968 yards inch.	20·6	15·7	10·23
Real penetration at 2,000 yards .. .. inch.	*21*	*15*	*10*

BREECH LOADERS.

Calibre .. .. inch.	9·2		6
Weight .. .. tons.	22		5
Projectile .. .. lbs.	376·68		99·2
Real weight .. .. lbs.	*380*		*100*
Velocity .. .. f.s.	2,001·3		1,935·7
Real velocity .. .. f.s.	*2,035*		*1,960*
$\frac{P.v^2}{2.8}$ .. .. f. tons.	10,826·9		2,624·7
Real muzzle energy .. .. f. tons.	*10,915*		*2,663*
Penetration wrought iron at 1,968 yards .. .. .. inch.	16·53		8·66
Real penetration at 2,000 yards .. .. inch.	*17·3*		*8·99*

According to the information we possess, there are at present thirty pieces of heavy calibre of modern construction mounted, in addition to the old-fashioned 100-ton guns and many others of less importance, whose numbers we are unacquainted with.

As things are, Gibraltar has an importance of the highest kind for England. In ordinary times her ships can coal (a fact of vital importance to their navigation), procure provisions, repair damages, and obtain shelter in a fortress belonging to her (a necessity which increases with the distance from home) on the road to India, and immediately in the Straits, to which Gibraltar gives its name. In case of war, its importance

[1] 64-pounders (?)

would be at once felt, and would remain undiminished, while Spain would remain *in statu quo*. This being so, the English command the whole Bay of Algeciras; one finds many Spanish people in their own country at the mercy of the guns of Gibraltar, and on the good pleasure of the English entirely depends life at Algeciras, San Roque, Orange Grove, Campamento, and all the rest. The English flag is proudly borne by her ships in Spanish waters, and life and buildings are at the mercy of her cannon. If our poor brave fleet desired to take shelter in what is ironically called the Bay of Algeciras, the guns of the rock and those of the English fleet, so superior in number, would reduce them to powder and sink our glorious banner in the sea, in spite of our guns making the friendly voice of the country heard, and the surrounding Spanish territory lending noble and brave aid to their brethren; while if the enemy's troops should disembark (which they can easily do anywhere), and should occupy the Queen of Spain's Chair, they would have with this, Gibraltar, and St. Roque, a magnificent base of operations for invasion, and, perhaps, conquering new portions of our beloved national territory. It is not possible to write on the subject of Algeciras Bay without the pen being driven by indignation and pain, without shame and humiliation causing deep grief to the heart; it is as if the venerable and glorious shade of our great history were flinging the stigma of unfulfilled duty in our face.

II.

Since Admiral Rooke, on 24th July, 1704, occupied the Rock in the name of the Archduke Charles of Austria, for the purpose of hoisting the English flag, that nation has never ceased to continually fortify Gibraltar. From that unhappy day until the dawn of the present century, Spain has fortified in her turn her own territory; has attempted to recover the Rock by force of arms, and has never lost sight of that much-to-be-desired object. The fortifications having been demolished during the War of Independence, nothing was done during the Civil Wars, which for a space of more than seventy years reduced our soil to poverty and stained it with blood; while the period of peace which followed these disastrous times, though it has allowed us to adjust our finances and to set aside for forts and guns an amount, which, if not sufficient, is at any rate in keeping with our budget, with the result that Ceuta, Cadiz, Cartagena, Ferrol, and other important points, merit the name of fortresses; still it has not rescued the Bay of Algeciras from its existing state of neglect.

This part of our coast, however, lends itself, if it were properly defended, to the command of the Bay of Gibraltar, into which no single English ship should be able to penetrate unless authorised by our flag. The fortifications of the Rock ought to be placed beneath the fire of our guns; our territory should be free from invasion; and finally, the omnipotent power of Great Britain, which fetters our national dignity, should be diminished.

One frequently hears that it is not pleasant to the English to have our guns so near them, and, therefore, the two Governments for fear of an international conflict maintain the *status quo*, which is derogatory to our self-respect.

We do not credit such an idea; we have blind faith in the patriotism of our rulers, and we believe that the time has come when, jealous of our indisputable right, through the medium of those diplomatic notes, which courtesy exacts between two friendly nations, this most important defence of our country will be undertaken without any necessity for a conflict that nothing would justify. We remember our poverty in comparison with Great Britain, the inferiority of our fleet, our unstable politics, our weak powers of organisation, all the circumstances in fact which would render the upsetting of mutual relations with so strong a Power exceedingly grave; but fortunately the re-assertion of a right, such as the fortification and defence of our soil, cannot be a cause of war. The opinion of the country is unanimous; national honour demands it; and the hour has come when putting away fear such an absurd state of things should disappear.

Convinced of the necessity of commanding Algeciras Bay by artillery fire, we took the opportunity of going over the place, and we now proceed to show the sites which in our judgment deserve special consideration, and the *rôle* which they are called upon to fulfil. Our task is easy in respect to such sites as past experience has pointed out as excellent, and whose suitability is more patent to-day; for the great increase in the range, precision, and power of modern artillery has only enhanced the importance they once had; and, further, has prevented the necessity of so many forts, because the increased ranges at which a cross fire can be obtained enable points three or four times further apart to support each other than was the case when smooth bores were in use.

With regard to the system of fortification which should be adopted, armoured towers and cupolas must be eliminated, for they only permit of a small arc of fire, and present difficulties in the matter of observation and laying; while their repair in case of rupture is a large and costly business, and their high price enhances the expense of their construction. They present, moreover, scant fitness for the service they are called on to perform; for they are interfered with by smoke, need skilful *personnel*, and have a divergent fire for each port: conditions which suggest their employment only in such cases where, failing a high command, they find themselves overlooked by an enemy's guns at close range.

The various positions which we proceed to point out have considerable fitness for their purpose, being situated just far enough from the batteries of Gibraltar for the reduction of those costly defences. Barbette batteries with spacious store rooms, good communications and shell stores, with ventilation, space, and light for all requirements, the guns protected only by solid parapets of earth and with convenient distances between them; batteries, in short, which while serving their purpose may be constructed economically with common and inexpensive materials, such as concrete and brick, with which works could be rapidly thrown up. All these conditions could not be attained without a sacrifice of *personnel;* but in a country such as ours with feeble resources and continually diminishing budgets, one in which each year's plans suffer alterations which simply confuse them, this would seem to be the most convenient system to adopt.

The Corps of Engineers have a reputation which is well known, and their undoubted dexterity will get over any difficulties in this matter that may present themselves. In some places it will be possible to put howitzers under cover, hidden by the folds of the ground, while their fire over the bay would be dreaded in proportion to the concealment of their position. We proceed to detail the sites which we believe most important on the bay.

FROM THE QUEEN OF SPAIN'S CHAIR TO CARNERO POINT.

On the north of Gibraltar, with its ridge running north and south, is the Sierra Carbonera (or "Queen of Spain's Chair") (**A**), with a height above sea level of 981 feet.[1] Its distance from the centre of the town of Gibraltar is 9,300 yards, from the mole 8,750 yards, from Europa Point 10,650 yards, from Rinconcillo Point 10,000 yards, from Algeciras 11,000 yards, and from Carnero Point 15,900 yards. It is not commanded by any height near it except the Rock, which, being 1,411 feet high and 7,650 yards distant, looks down on it at an angle of depression of only 1° 9′, a matter of small consequence. The high site it presents suggests a place for a howitzer battery—four of 12 inches and six of 8 inches, which would demolish with curved fire the whole length of Gibraltar from the Galleries to Europa Point. The town would be dominated at a range of 7,110 yards by projectiles of 606 lbs. at angles of descent of from 24° to 64°, according to the charges employed; their muzzle energy would vary from 3,255 f. tons in the 12-inch howitzer to from 1,398 f. tons to 1,498 f. tons in the 8-inch howitzer. If English ships entered the bay with a view to reprovision the Rock, they would find themselves exposed to such projectiles, which could penetrate their most protected parts, and this battery could cross its fire with all the other batteries to be established at other points on the bay.

The eight new English cruisers of the "St. George" type have 5 inches (12·7 centimetres) as the maximum thickness of their steel protection, and could be pierced by 12-inch howitzers. The singular importance of this site admits of a doubt whether a light fort should not be thrown up and armed with four 4·7-inch guns and two Q.F.'s; but to decide this question a more lengthened study than we have been able to make is needed.

On a spur of the Sierra Carbonera running towards Gibraltar, and 1,970 yards nearer than the crest, one comes to a little hill called La Pedrera ("The Quarry") (**B**), 492 feet above sea level. Enjoying all the advantages enumerated above it indicates a position for two guns of 12 inches and two howitzers of the same calibre. Looking to the north on the right and 2,200 yards away one sees La Tunara (**C**), where a battery of four guns of 5·9 inches and four of 4·7 inches would sweep the slopes of the hill on the east of the Rock, would prevent landing, and would flank all the east coast and all access to the heights. In order to complete the low fire at the base of the Sierra Carbonera (**D**), Punta Mala, 2,200 yards from La Pedrera (**B**) and 4,600 yards from the centre of Gibraltar town, would,

[1] English map shows 971 feet.

in my opinion, be a suitable site for four 8-inch guns and four howitzers of the same calibre. There would then be three advanced batteries for the prevention of access from Gibraltar into Spain; one (**B**) in a central elevated position at La Pedrera and two on each flank on the shore, one (**C**) at La Tunara, and the other (**D**) to the West at Punta Mala, while on the crest of the Sierra, behind these three and on the highest ground, is the howitzer battery (**A**).

One can form a clear idea of the efficacy of the fire of these batteries from the following table giving approximate data.

Position.	Batteries.	Ranges.	Metres.	Yards.	Proposed Armament. No.	Nature.	Calibre. c.m.	Calibre. Inch.	Total Guns.
	D								
	Punta Mala ..	To Old Mole ..	3700	4046	4	Guns	24	8	8
		To New Mole ..	5700	6233					
		To Europa Point	7600	8311	4	Howitzers	24	8	
	B								
Sierra Carbonera	La Pedrera ..	To Old Mole ..	4000	4374					
Queen of Spain's	"The Quarry"..	To New Mole ..	6200	6780	2	Guns	30·5	12	4
Chair and its	Advanced Spur of	To Europa Point	8000	8749	2	Howitzers	30·5	12	
Dependencies	Q. of S. Chair	To Punta Mala	1600	1749					
	C								
		To Old Mole ..	4000	4374					
34 Pieces, viz.,	La Tunara.. ..	To New Mole ..	6000	6562	4	Guns	15	5.9	
14 Guns.		To Europa Point	7800	8530	4	Howitzers	15	5·9	8
20 Howitzers.		To La Pedrera..	2000	2187					
	A								
		To Old Mole ..	5900	6452	4	Howitzers	30·5	12	
	The Heights of	To New Mole ..	8000	8749	6	Howitzers	24	8	14
	Sierra Carbonera	To Europa Point	9900	10827	4	Guns	12	4·7	
		To La Pedrera..	1900	2078					

Following the contour of the bay one next comes to a good position (**E**) for a battery at Punta Mirador on the brow of a hill where there is an old battery. This would be considered as an auxiliary to that of the Sierra Carbonera. Situated at 7,100 yards from Gibraltar town, in the exact centre of the bay, and at an equal distance from both Algeciras and the English fortress, it sweeps the excellent anchorages of Mayorga ("Orange Grove"), Punta Mala, the moles at the Rock, and the isthmus which unites it to Spain, the position of the bay opposite to the mouths of the rivers Palmones ("Second River") and Guardarranque ("First River"), and the bay at Point Rinconcillo (**F**). It takes the English batteries in flank, and has in front of it such ships as may enter the waters of Algeciras or Gibraltar. We think four 8-inch guns should form the armament for this battery, the advantages of whose situation it is impossible to doubt.

Continuing along the coast and passing the above-mentioned rivers (**F**) we come to Point Rinconcillo, in the immediate neighbourhood of which there was once a fort close to the magazine of Torre Almirante. This is another site naturally indicated for a fort or powerful battery, which being 2,700 yards from Algeciras, would protect all our coast, the

passages of the rivers Palmones and Guardarranque, and obtain a good cross fire with all the other batteries. Such an appropriate position would be advantageously defended by four 8-inch guns, four 8-inch howitzers, four 5·9-inch guns, and also four 5·9-inch howitzers. This position would form what may be called the central defence of the bay whose extremities would be protected by the Sierra Carbonera (**A**) and Punta Carnero (**H**), and there would require to be constructed a fort whose relative position is shown on the accompanying table :—

Position.	Range. To.	Range. M.	Range. Yards.	Proposed Armament. No.	Proposed Armament. Nature.	Proposed Armament. Calibre. c.m.	Proposed Armament. Calibre. Inches	Total Guns.
F	Point Mirador	5000	5468	4	Guns	24	8	
Rinconcillo Point—	Point Mala	6500	7108	4	Guns	15	5·9	
20 Guns, viz.,	Queen of Spain's Chair (Table Land)	8200*	8968*	4	Howitzers	24	8	20
12 Guns	City of Gibraltar ..	8500	9296	4	Howitzers	15	5.9	
8 Howitzers	Europa Point	10000	10936	4	Q.F. Guns	12	4·7	
	Point San Garcia ..	5200	5687	—				
	Point Carnero	8200	8968	—				
G								
San Garcia—	Europa Point	7500	8201	4	Howitzers	24	8	
8 Guns, viz.,	New Mole	7200	7873	4	Guns	15	5·9	8
4 Guns	Old Mole	8200	8968	—				
4 Howitzers	Point Carnero	3000	3281	—				
H								
Point Carnero—	.. ..	—	—	2	Guns	30·5	12	
14 Guns, viz,	Europa Point	8000	8749	4	Guns	15	5·9	14
6 Guns	New Mole	8200	8968	4	Howitzers	30.5	12	
8 Howitzers	Old Mole	9800	10717	4	Howitzers	15	5·9	

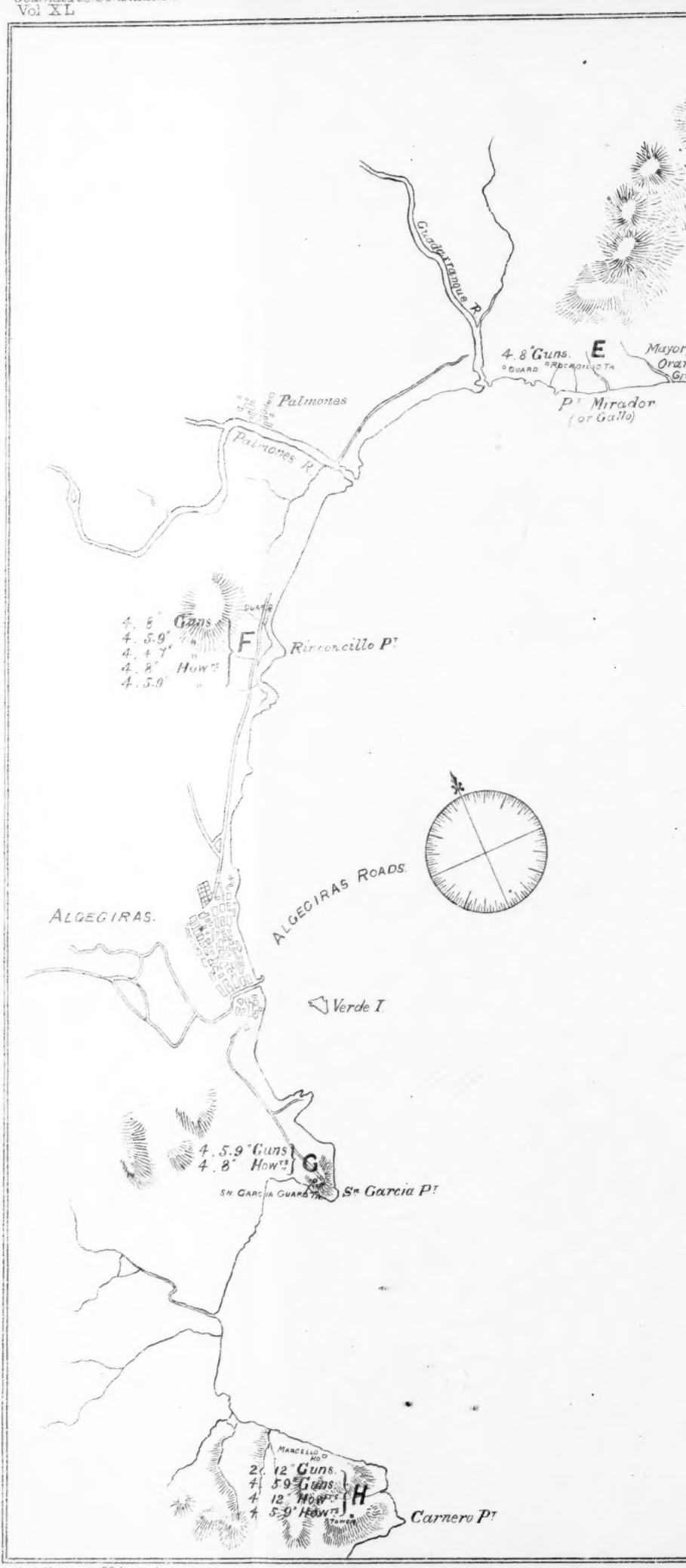
*Incorrect.

It will be seen that the defences of Algeciras Bay and the attack of the fortress of Gibraltar may be divided into three groups, all working for the same end and mutually protecting each other. Group I. would be the nearest to the enemy's fortress and to his communications with Spain. In it are the batteries situated on the heights of the Queen of Spain's Chair (**A**), and included in it are La Tunara (**C**), La Pedrera (**B**), Punta Mala (**D**), and Punta Mirador (**E**). The town and moles of Gibraltar, both the eastern and western bays, the ridge of the Rock, and the way into Spain would be exposed to the combined fire of these batteries whose detached and extended situations allow of a convergence of fire on the English fortress.

Having little space and, therefore, with its batteries on a small front, this fortress has divergent and, therefore, less efficacious fire for its land attack.

The guns at Rinconcillo (**F**) constitute Group II. which must be considered as the central defences of the bay, which they would sweep with their fire, their projectiles reaching Gibraltar at a range of 9,300 yards.

There remains Group III. as the defence of the entrance to the bay,



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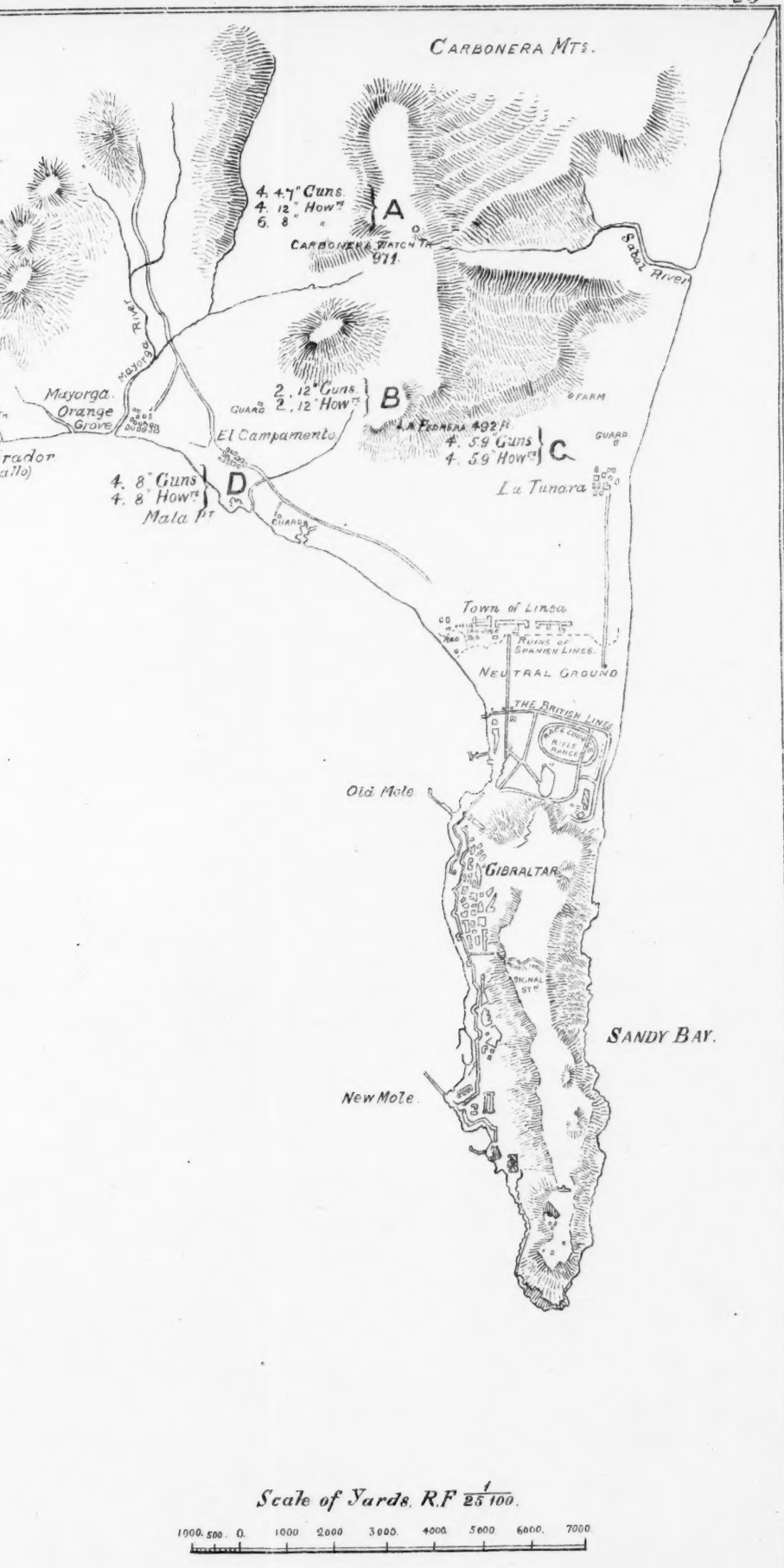

Scale of Yards, R.F $\frac{1}{25\,100}$.

1000. 500. 0. 1000 2000 3000. 4000. 5000 6000. 7000

consisting of the batteries at points San Garcia (**G**) and Carnero (**H**); the latter being a splendid site because its fire reaches as far as Europa Point and the new mole, and would be supported by Point San Garcia under very favourable conditions.

The English took Gibraltar at a time when guns had a range of 3,300 yards, little precision, and but feeble projectiles. They could protect their fleet with their own artillery without the neighbouring Spanish positions being able to do them the least harm; and in like manner at that period the Gibraltar guns could do no damage to Algeciras or its bay, nor to the defensive points intervening. But things have changed. The effect of guns situated in the places we have mentioned would be to sweep all Gibraltar more or less effectually according to their distance, and English ships could not attempt to provision the place except under the fire of Spanish guns. Our batteries placed on an arc of 4,400 yards radius within the circumference of which the Rock is found could concentrate their fire on it, or sweep the bay at any required spot. Fighting conditions have changed, but with advantage to Spain. The following form is a recapitulation of the batteries and guns indicated above:—

				Guns.					Howitzers.				Total Ordnance in each Battery.
				12″	8″	5″·9	4″·7	Total	12″	8″	5″·9	Total	
				30·5	24	15	12		30·5	24	15		
GROUP I. *Facing Gibraltar.*													
A Queen of Spain's Chair.	34 Pieces— 14 Guns 20 Howitzers	At a height of 976 feet	**A**	—	—	—	4	4	4	6	—	10	14
		La Pedrera ..	**B**	2	—	—	—	2	2	—	—	2	4
		Punta Mala ..	**D**	—	4	—	—	4	—	4	—	4	8
		La Tunara ..	**C**	—	—	4	—	4	—	—	4	4	8
Point Mirador		4 Guns	**E**	—	4	—	—	4	—	—	—	—	4
GROUP II. *Central Defences.*													
Point Rinconcillo ..	20 Pieces	12 Guns	**F**	—	4	4	4	12	—	—	—	—	20
		8 Howitzers ..		—	—	—	—	—	—	4	4	8	
GROUP III. *Defence of Entrance to Bay.*													
Point San Garcia ..	8 Pieces	4 Guns	**G**	—	—	4	—	4	—	—	—	—	8
		4 Howitzers ..		—	—	—	—	—	—	4	—	4	
Point Camero ..	14 Pieces	6 Guns	**H**	2	—	4	—	6	—	—	—	—	14
		8 Howitzers ..		—	—	—	—	—	4	—	4	8	
June, 1895.		Total		4	12	16	8	40	10	18	12	40	80

THE SWISS ARMY MANŒUVRES, 1896.

By Major G. Le M. GRETTON, 3rd Bn. Royal Warwickshire Regiment.

PART II.

BEFORE giving a sketch of any of the engagements which took place during the manœuvres, it will be well briefly to state how a Swiss army corps is composed. It has two divisions of 11,198 men, each containing two brigades, *i.e.*, four regiments of infantry, and a battalion of rifles; half a battalion of engineers; a company of light cavalry called guides; four field batteries; and a field hospital, the *lazaret*. In addition to these divisional troops, there are a brigade of dragoons, about 750 strong, and half a company of guides; four batteries of corps artillery, and four columns of the artillery park; telegraph and bridging engineers; the corps *lazaret*, and about 400 administrative, or, as we used to call them, commissariat troops. The total strength, exclusive of a handful of cyclists employed solely as orderlies, is 25,667 officers and men, with 4,853 horses and 916 carriages of all descriptions.

In an infantry regiment there are three battalions, of four companies each, sub-divided into platoons (half companies) and sections, recruited on strictly territorial lines, so that the men serve in the ranks with the friends and neighbours whom they habitually meet in civil life. The companies consist of a captain and four lieutenants; a sergeant-major and a *fourrier* (quartermaster-sergeant), eight sergeants, and sixteen corporals; three buglers and two drummers; a member of the ambulance corps, and 144 rank and file. The captains are not mounted, but are relieved from the burden of the ungainly knapsack, which their subalterns carry in the field. The staff of the battalion consists of a major in command, two surgeons, a quartermaster, the adjutant and his assistant, the adjutant-sergeant, a specially selected non-commissioned officer, who carries the colour in the field; an armourer-sergeant with two men under him; a non-commissioned officer and six men from the military train; a corporal of buglers, and sixteen ambulance men and stretcher bearers. After deducting non-combatants, the battalion musters 720, all told. It possesses two ammunition carts and five baggage waggons, each drawn by two horses, supplemented by three requisitioned waggons, also drawn by two horses each. The regiment is commanded by a lieut.-colonel, with the following staff, viz., an adjutant whose duties appear to correspond with those of a brigade-major, a quartermaster, one or two chaplains, Catholic or Protestant according to the dominant religion of the canton from which the regiment is raised; an adjutant-sergeant and a private of the military train; an adjutant-sergeant in charge of the ammunition

carts ; a bugler and a shoeing smith. The baggage of the regimental staff is carried in a light two-horse waggon, exclusively devoted to the purpose.

During their training the officers of each unit are expected to mess together for breakfast and mid-day dinner ; at supper their attendance is optional. The prices are very low ; for instance, at the great central school at Berne, the breakfast of café-au-lait and bread and butter costs 7½d. ; dinner, with soup, two courses of meat, dessert, and wine, is charged 1s. 6d.; and supper, 1s. The officers deserve to mess cheaply, for they are uncomfortably housed in barracks, where three, four, or even five subalterns are packed together in one sleeping room. It is said that with great economy an officer can make his pay cover his expenses, once he has bought his uniform. The government grants him £10 towards his kit, which costs at least twice this sum.

At manœuvres the men seem to be very well treated. In addition to their pay, which in peace-time ranges from eightpence a day for the infantry private to fourteen shillings for the colonel commanding the army corps, they receive free rations of bread, fresh meat, vegetables, salt, sugar, and coffee, to which wine or spirits are added in very bad weather. They also carry an emergency ration of "bully beef," to the excellence of which I can testify from personal experience. The tin on which I formed my opinion was opened with one of the knives served out to every soldier ; it contained a large blade, a tin-opener, a screw-driver, and a punch for straps. But the Swiss infantry certainly need to be well fed, for the weight of their packs and accoutrements is very great. Including their rations the men at manœuvres carry nearly 50 lbs., without allowing for the sixty small picks and shovels, eight axes, and four saws which are distributed among the company. On active service this burden is increased by 150 rounds of ammunition. and so forth, which run up the weight to about 60 lbs. Each man carries his own camp kettle ; but among the battalions which I watched when they halted on the battle-field for rest and food, there seemed to be none of the collapsing canvas water-buckets in use in the French army ; and the fatigues had only their camp kettles in which to bring back water to their comrades. Although the State does not provide the infantry with boots, the men are well shod in strong "lace-ups," broad in the tread and square at the toe. With the exception of the shirts, the rest of the kit is issued by Government. The uniform consists of a képi, a fatigue cap not unlike ours, a blue capote modelled on that of the French army, a blue "jumper" in which all the hard work is done, and blue trousers without gaiters or leggings of any sort. The belts and slings are black and rusty, and look as if they were never cleaned, but the rifles and dagger bayonets are kept bright and in good order. This dress, though unattractive, is very practical, for the colour blends so well with the Swiss hills and forests that it was very difficult to see the troops at any distance.

Each squadron of dragoons has four officers and 119 non-commissioned officers and men, with a corresponding number of chargers. These horses, chiefly bred in Hungary, North Germany, and Ireland, belong to

individual troopers, who buy them from Government after they have been broken in, for a sum down, which is returned to them by instalments of 10 per cent. paid, if the horse is sound and fit for duty, at the annual training of the squadron. At the end of ten years the Government have no further claim on the horse, which then becomes the absolute property of the cavalryman. It is not to be expected that the Swiss, a nation of mountaineers, should be good riders; and though much trouble is taken to teach the cavalry the art of equitation, there can be no doubt that an English yeomanry corps would ride through a Swiss cavalry regiment.

The artillery is the arm which most impresses an Englishman. At home we have always been taught to believe that it is impossible to man field batteries with militia gunners, but the Swiss do so with great success; for, though the men look sloppy and untidy, and, of course, are wanting in the precision, smartness, and dash of the Royal Artillery, they drive well enough to manœuvre steadily in open country and to take their guns wherever they are wanted. Each of the twelve field batteries, two of which form a regiment, turned out, like the rest of the IIIrd Army Corps, fully equipped for war. The *personnel* consists of a captain and four lieutenants, fifteen under-officers, and 138 men; the *matériel* of six guns and six ammunition waggons, a spare gun-carriage, a store waggon, a field forge and kitchen combined in which the dinners are cooked upon the march, a *fourgon*, two provision waggons, and 120 horses. Most of these are rough-looking, coarse-bred beasts, requisitioned for hire in the neighbourhood in which the battery is raised. Though fine drawn from their labours in civil life, they are quite able to trot across ploughed fields heavy from recent rain and to rush the guns up steep and slippery hills. The best of the cattle are Government property, constantly used at the recruits' schools. During the non-training period the horses, as well as the guns, harness, and stores, are entrusted to the care of a staff of civilians, under the direction of the professional officers mentioned in the first part of this article. The men, strong-built, deep-chested fellows, show great zeal and intelligence in obeying their order given by whistle, signal, or word of mouth; they work in perfect silence; their officers, who, like those of the cavalry, are drawn from the highest ranks of Swiss society, have them well in hand, and give their orders with a precision and an obvious habit of command far from universal among their comrades in the infantry.

Before bringing their guns into action the artillery commanders seemed to select their positions carefully. If on a rounded hill, they came down below the sky-line; if on the reverse side, they avoided slopes so steep that there would have been danger of the guns running back too far if they had been fired with projectiles, instead of blank. The objective was clearly explained to the captains of batteries, who brought their guns up at a slow trot and moved fairly straight into their places with respectable accuracy of dressing and interval. After unlimbering, which was coolly and steadily done, there appeared to be no unnecessary running up and back of the guns, always very carefully laid; in a word, there was no waste of time before the batteries opened fire, and all the

work was done in a business-like manner, without bustle or confusion. As far as I saw, the batteries seldom changed position ; they threw out no scouts or battle patrols of their own, and relied upon the cavalry for information, and for security upon their infantry escort, which was usually thrown a few hundred yards to the front, on the outer flank of the guns. When supporting an infantry attack, they fired over the heads of the men. At least on one occasion, when a battery was in action behind a ridge of hillocks, which concealed their objective, while giving them cover from the enemy's fire, recourse was had to indirect laying.

Each column of the field artillery park consists of 5 officers, 13 non-commissioned officers, 136 men, and 156 horses. The captain in command is responsible for fourteen *demi-caissons* of cartridges, of which one is for the cavalry, the remainder for the infantry ; twelve *demi-caissons* of artillery ammunition; three spare carriages; a waggon-load of artillery tools; another containing the plant of the company of artificers, 146 strong, which is attached to the gunners; a field forge and two provision carts.

The engineers are organised in half-battalions of two companies of four officers and 185 non-commissioned officers and men in each. Four out of the twelve waggons allotted to the half-battalion are used to transport infantry pioneering tools. I was not fortunate enough to see the engineers bridge the Rhine or carry out any other important work ; but on one of the field days they barricaded a bridge so thoroughly with carts and barbed wire, that the enemy could not have stormed it until the obstacles had been demolished by artillery fire. Even with the help of some friendly sappers it took me about five minutes to cross the bridge, although it was only about 30 yards in length. The engineers make excellent gun-pits, and are most particular in their shelter trenches to cover the parapet with grass and boughs of trees, so as to make it look as much like a hedge as possible. But by a curious piece of carelessness, on at least one occasion they spoiled the effect by lining the trench with sappers, whose long-handled shovels, slung over their shoulders, projected over the crest and effectually revealed the position of the work to their antagonists. The pontoon section is in charge of a field officer, who has at his disposal two companies of 123 officers and men, and a detachment of the train. Altogether he commands 364 men with 37 carts and waggons and 179 horses. The strength of the telegraph company is 148, with 9 carriages and 39 horses ; and the railway battalion has four companies, with a total strength of 371 officers and men, 69 horses, and 17 vehicles.

Each unit of the administrative troops, responsible for the supplies of the army corps, has two companies, sub-divided into two sections, of which one is employed at the magazines, the other in butchering and baking duties. At the manœuvres there was a steam bakery, which was said to work very satisfactorily. The transport is provided by two sections of the military train (286 men), whose 419 horses draw 20 carts full of tools, plant, and so forth, 2 waggons, 2 forges, and 72 provision carts. It is a great advantage for the Swiss that the carts, waggons, and

harness in their army are practically identical with those used by the civil population, as neither drivers nor horses have anything fresh to learn when called out for duty with the army. On the subject of the supply of horses for the army on a war footing, the general impression appeared to be that enough draft animals could be obtained for a complete mobilisation; but this would so drain the resources of the country that there would be no reserve; and that the number of saddle horses is so inadequate that many officers, whose duties require them to be mounted, would have to go on foot. In fact, the officer's charger in Switzerland is rather like the useful and ubiquitous animal we know in England, which during the same drill season serves one or two trainings in the Militia, becomes a troop horse for ten days in the Yeomanry, and fills up spare time carrying field officers of Volunteers on their Saturday afternoon parades.

But if there is a dearth of officers in the Swiss army, there are at any rate plenty of doctors, enough, as they themselves admit, for all the exigencies of active service. How they manage to leave their civilian practice to go to manœuvres, or to take medical charge of the recruits during their preliminary drill, is difficult to understand; but even the leading practitioners in the country cheerfully turn out to take their turn of duty. Many of them even make time to pass in tactics, in order to qualify for the higher grades in the medical service. Their course is the same as that of the combatant officers who go up for promotion—in the morning, lectures; in the afternoon, tactical exercises with imaginary men. The reasons given for this apparently unnecessary study is that the doctors should know where to place their dressing stations and ambulances on the field of battle.

The medical examinations to which the Swiss troops are subjected is very severe, and justify the national boast that only the very strong can find a place in the ranks of the *élite*. The figures speak for themselves:—In 1894, out of 26,326 recruits, lads of twenty years of age, only 14,101 were considered fit to join at once; of the remainder, 5,472 were put back for one or two years to give them time to improve, while 6,753, or 25·6 of the whole, were definitely rejected. In the same year 34,150 full-grown men were inspected at the beginning of their training, and no fewer than 9,473, or 27·7 per cent., were pronounced to have become permanently unfit. But if the Swiss are rigorous in expelling weaklings from their army, they are generous in dealing with men who are killed or incapacitated while on military duty. For a poor country the pensions for widows and for men permanently disabled are liberal, and the State is trying the experiment of gratuitously insuring all officers and men against any accidents which they may meet with during their training.

To each unit of the various arms are attached one or more surgeons, with a small staff of stretcher bearers and *infirmiers*, men who have received a short training as nurses in a hospital. Their duty is to pass back the wounded to the dressing stations of the three ambulances which form the divisional *lazaret*. Each of these is manned by 4 captains or first lieutenant surgeons, a lieutenant dispenser and a quartermaster,

12 hospital orderlies *(infirmiers)*, and 22 stretcher bearers; and can accommodate 200 patients, for whom 40 can be provided with beds. The plant of the three combined ambulances consists of three large store waggons, six lighter carts for the wounded, three provision waggons and a kitchen on wheels, a cart containing two huge caldrons heated by brasiers which hang below them. The four ambulances attached to the corps *lazaret* are organised on the same system as those of the division. To empty them into the base hospitals there are five "columns of transport," each containing thirty-two carriages, besides trains specially constructed for this purpose. In the event of war, it is proposed to extemporise hospitals out of the hotels, which would, of course, be deserted by the tourists who fill them in time of peace; and in these hospitals the services of the various *sociétés de secours* (Red Cross and Samaritan societies) will be utilised, but members of these associations will not be allowed on the battle-field.

In action groups of four guns were loaded from a waggon brought up as close as possible to the battery. The limbers, the boxes of which are said to contain the full complement of rounds, and the remainder of the waggons stood in column of carriages, in rear of the flanks of the battery to which they belonged. It is said that the artillery made excellent shooting at the commencement of the training, when seventy-two guns were massed against targets of various kinds. The Swiss Government does all in its power to develop accuracy of aim by spending much money in practice ammunition; indeed, an officer on the staff assured me that a captain commanding a battery fires a larger number of rounds than a French or German officer of equal rank. To quote his words:—"Before a lieutenant is promoted he must have been present at a large amount of practice and have handled the battery in action. A captain, to obtain the command of a battery, himself fires about 600 projectiles at a school of recruits; in a school of shooting *(école de tir)* he fires 160 rounds and watches the effect of many more. In the biennial training each battery expends from 250 to 300 rounds."

From another source, for the accuracy of which, however, I cannot vouch, I learnt that little attention is paid in the training of the artillery officers to teaching them the value of concentrated fire. Be that as it may, the individual batteries, as a rule, seemed very well handled, though on some of the large field-days the senior officers did not adequately support the infantry attack, and remained in action at 4,000 yards range, when they could have safely advanced to within half that distance. This tendency to hang back, however, was certainly not shown on one occasion, when three batteries had been left, virtually unsupported by infantry, on a plateau. They suddenly discovered that their outer flank was being turned by the enemy's riflemen, upon whom they could not fire owing to a thick growth of trees which lined the edge of their position. To cover their retreat four guns dashed through the little wood, and came into action against the first line of skirmishers, not more than 300 yards off. Had the infantry been well handled, these guns would have been silenced and captured; but the quality of the infantry officer

varies much in the Swiss army, and none of the men there present rose to the occasion. They apparently waited for orders how to act on this emergency and remained passive, hardly replying at all to the shrapnel which the battery hurled against them. Not even when the guns were limbering up did the company officers rouse themselves sufficiently to crush them with magazine fire. On the same battle-field only a few minutes later a similar want of promptitude was shown by a captain who had occupied a height commanding the road along which the artillery was retreating. Although he saw two batteries retiring along the road about 600 yards off, he did not fire a single round, and quietly watched them disappear into a wood!

After this long degression it is time to return to the immediate subject of this article, the manœuvres of the IIIrd Army Corps.

On the day after the brigade drill mentioned in the October number of this JOURNAL, the writer witnessed a picturesque and typical combat between two infantry regiments, of which the Blackcaps represented a Swiss force, the Whitecaps an invader who had raided across the Rhine.

The morning mist hung so heavily over the valley in which the Blackcaps had assembled from the villages where they had been cantoned, that it was impossible to see far in any direction, but dropping shots guided me to the foot of a flat-topped hill where the main body (two battalions) was drawn up behind the buildings of a large farm. Two of the four companies of the advance guard were lying down in reserve half way up the hill, while the remainder were halted on the brow, held in check by fire from a small party in a copse, which lay across the road about 200 yards to the front. The commander of the advance guard opened a frontal fire upon the Whitecaps, who were well posted behind trees and banks, while his troops were halted on an open meadow. When the reserves came up, instead of availing themselves of the undulations of the ground, by which they could have turned the flanks of the wood unseen by their enemy, they marched right up into the firing line, and then moved slowly right and left under a withering magazine fire. When both their flanks were threatened and an attack with the bayonet became imminent, the defenders retired in good order, much elated at the thought that their single company had succeeded in delaying the march of three battalions for nearly half an hour. The main body of Whitecaps was about a mile to the rear, and the detachment moved so quickly and silently through the pinewoods, still grey with mist, that they gave their pursuers the slip and rejoined their battalion in safety. As I accompanied this company in its retreat I was able to see the disposition of the Whitecaps before the battle began. They occupied a low-rounded hill, part of an amphitheatre of heights which enclosed a valley half a mile in width. The right rested on a farm-house and orchard from which a natural glacis, a miniature of that at St. Privat, sloped to the right and front. The centre had a fair field of fire over the valley which was entirely destitute of cover. The left was weak; for it was dominated by a chain of thickly-wooded hills, by which the northern and southern sides of the amphitheatre were connected. The southern heights were covered with

pinewoods, broken by a few clearings of bright green meadow land. The front was watched by patrols and by double sentries who crouched below the sky-line, or knelt behinds the trunks of trees.

On the reverse side of the hill, well out of sight, the Whitecap regiment was drawn up in line of battalion quarter columns, and when the reports arrived from the front that the enemy were in sight, the companies ordered to form the first line moved off with a creditable absence of noise or excitement, and steadily extended along the crest. The soldiers were not allowed to quit their places to look for cover; where the line halted there the men remained, and if they could not see to shoot from the knee, they rose to their feet to deliver their fire. Of the enemy, only a few scouts were visible, but in a few minutes, just as the clouds completely rolled away, two companies emerged from the forest opposite to us; and skirmishing across the level valley, opened fire at about 500 yards range. If this demonstration was intended to draw the Whitecap commander, it was most successful, for he hurriedly reinforced his first line, and commenced a furious fusilade along the whole of his front, which was about 500 yards in length. After thus ascertaining their enemy's exact position, the Whitecaps determined to attack his left flank, and leaving about a battalion to occupy the Whitecaps' attention by feigned attacks along their left front, commenced their turning movement. But as if to give full notice of their intention, many of the Blackcap company commanders left the shelter of the pine trees behind which they were completly concealed from view, and made ostentatious and unnecessary processional movements across the clearings, in full sight and within medium range of the invaders. The latter did not fire upon them, but retaliated by a counter-stroke against the troops scattered, in length without depth, across the plain. As far as I could ascertain, the counter-attack was composed of a battalion and a half or two battalions; it moved steadily, though slowly, in three lines and drove the Whitecaps back into the forest. Whether the officer in command was hampered by orders or was compelled to await them I know not, but certainly he failed to profit by his success. For some time he halted in the valley, without even answering the fire of a Blackcap company which, instead of retreating, had swung round and opened vehemently upon his flank with their magazines. They were unexpectedly reinforced by the initiative of the captain of a company, a flank guard of the turning force, who, bursting from the woods, brought his men across the open at a fast run and ranged them alongside their resolute comrades. Then for the first time the counter-attack realised that they were being enfiladed, but instead of at once brushing aside their assailants, they detached two companies to reply to them, while the main body remained inactive under the stinging fire of the sharpshooters of the beaten force, to whom the irresolution of the counter-attack had given time to rally. The troops left to guard the main position were too much interested in watching the counter-attack to think of supporting it; they could have annihilated the Blackcap companies, who had attacked the counter-stroke in flank, but, as far as I could see, they did not once fire at them.

While this fighting was going on in the open valley, the pressure on the defender's left had become severe. To meet the Blackcaps' turning movement, the original position (which commanded the line of retreat) had been so denuded of Whitecap troops that behind the firing line on the west there were practically no reserves; and when a body of Blackcaps debouched from the wood and assaulted the left centre, there were but skirmishers left to meet them, for the counter-attack, instead of flinging itself boldly against the flank of the enemy's columns as they struggled through the woods, remained inactive, still paralysed by the fire of scattered sections which it could easily have put to flight. At this moment the "Cease fire" sounded, so that this interesting little combat was not fought out to the bitter end.

At none of the engagements at which I was present was any preparation apparently made in the counter attacks (which took place nearly every day) to prepare for the flanking fire with which the defending troops, however hardly pressed, never failed to greet their assailants. Machine guns in echelon on the flanks of the attacking lines would have been invaluable; but the Swiss do not appear to employ them in the field.

This infantry combat has been described at some length, because it illustrates the inability of many of the regimental officers to make good use of the excellent material under their command. Among the senior officers of the Swiss army there are men born with such a natural genius for war, that despite their very limited opportunities of practical work, they have learnt by hard study how to manœuvre large bodies of troops with judgment and decision. In some of the concluding battles the divisions were admirably handled by the colonels in command[1]; counter-attacks were well conceived and executed at the right moment, and difficult changes of front carried out with calmness and precision. But this high standard of tactical knowledge appears exceptional; movements were frequently crippled by the want of experience of the subordinates entrusted with the detail of their execution; and there were many instances of want of cohesion when the different arms, and even units of the same arm, did not back each other up; but, like a bad football team, played entirely for their own hands. On the other hand, there were battalions and regiments in which the leading was admirable, and where unity of purpose and mutual support were thoroughly understood. It is easy to criticise, but the fact remains that the Swiss army is so good, that a spectator at their manœuvres finds it hard to realise that he is watching, not regular troops, but a militia of whom the rank and file serve for considerably less time than the soldiers in the 3rd and 4th Battalions of our territorial regiments.

In mixing with the men, it is impossible not to be struck with their resolute, self-respecting bearing, and their evident determination to do their work as thoroughly as possible. A few months ago two regiments, composed of small peasant proprietors, whose holdings are scattered among the hills which encircle the Lake of Zurich, showed how ready they were

[1] It should be explained that Colonel is the highest rank in the Swiss army.

to turn out at their country's call. There had been an ebullition of mob violence against a colony of Italians, who undersell the local labour market; for some days the recruits from the depôt in the town had kept the rioters in check, but the Federal government suddenly sent them back to their barracks, saying that the local authorities must call out troops from the neighbourhood, as the young soldiers' education could no longer be interrupted by police duty. The order—a wholly unexpected one—for assembling the two peasant proprietor battalions was issued at 9 a.m., and was telegraphed and telephoned in every direction. Each Swiss militiaman keeps his arms and his complete kit and thirty rounds of ball cartridge at his home, and when ordered out, has to bring food with him for twenty-four hours' consumption. In five hours, twelve hundred officers and men ready, as far as individuals were concerned, for active service, had paraded, marched into Zurich, and occupied the disaffected part of the city. The only absentees were men whose farms were so high in the mountains that they could not be summoned in time.

The relations between officers and men seem to vary greatly. In the artillery the men treated their officers with the same respect as is shown to the commissioned ranks in the English army and militia; but in the infantry this was not always the case. In some battalions, at the mid-day halt, I saw privates go up to their officers without saluting, hands in their pockets and cigars in mouth. This may be explained by the fact that many men of good social position are too busy to sacrifice the time necessary to qualify for a commission, and remain in the ranks all through their service; while inferior men, small tradesmen, artisans, people who make their living out of the well-to-do private—often their employer in civil life—sometimes become lieutenants. But, though the officers are occasionally treated with scant ceremony, they are obeyed; for the Swiss military code is strict: regimental officers have considerable powers of punishment entrusted to them, and a judicial staff for dealing with serious offences is part of the establishment of the army.

The non-commissioned officers appear to efface themselves and to leave all the work in the field to be done by the subalterns. Probably they are actuated by the same reason as the sergeant in our militia who is not on the permanent staff, who interferes as little as he can with the men, from fear of consequences when the battalion is disbanded.

Without the help of any non-commissioned officer of the authority and experience of our staff-sergeants, and without the invaluable backbone of old soldiers which our militia possesses, the Swiss officers must have hard work indeed in bivouac and in cantonments. This year the weather was too bad for the troops to sleep in the open, as they do in dry seasons; so they were packed into barns and stables, schools and coach-houses, which they kept in very good order. The straw on which they slept was neatly made into beds, the floors were carefully swept, the kits of the orderly men were tidily arranged. The streets of the villages in which they were lodged were sweet and clean, and the latrine arrangements must have been excellent, as

there was no trace of evil smells from them. The Swiss evidently feel they can trust their men, for at the mid-day rest, if a battalion is near a village, the men are allowed to fall out to visit it, for they always return in time for the resumption of operations. Once only did I see any abuse of this confidence: a small party skulked to the back of an inn and remained there till hunted out by an indignant mounted officer, whose language would have astonished even the British army in Flanders.

A spectator has little opportunity of judging of the efficiency of the staff, but the orders were clear, precise, and short, and all the arrangements for the commissariat and transport, and the gradual concentration of the various arms into an army corps, worked, as far as I hear, without a hitch. Had there been a break-down, it would have been loudly blamed by the number of Swiss officers in mufti, who followed the troops, and whose criticisms of their superiors are unrestrained by the reserve which prevails in other armies in this respect. Of the frank and genial courtesy of the Swiss of all ranks towards strangers at their manœuvres it is impossible to speak too highly. It is delightful for a Briton to find himself in a country where the mere fact of his being an Englishman does not render him at once an object of suspicion and dislike.

NAVAL NOTES.

HOME.—The following are the principal appointments which have been made: Vice-Admiral—Sir J. O. Hopkins, K.C.B., to be Commander-in-Chief in the Mediterranean. Rear-Admiral—H. J. Carr to be Admiral Superintendent of Devonport Dockyard. Captains—H. T. Grenfell to "Trafalgar"; R. C. Prothero to "Revenge"; Burgess Watson to the "Thunderer," for Pembroke Yard; C. Windham to "Osborne"; W. C. C. Forsyth to "Narcissus"; V. A. Tisdall to "Rainbow"; C. P. Hicks to "Terror," as Senior Officer at Bermuda; C. P. Tudor to "Melampus." Commanders—D. A. Gamble to "Beagle"; N. G. Macalister to "Urgent"; G. L. Bennett to "Buzzard"; A. H. Smith-Dorrien to "Imogene."

The Particular Service Squadron has now been definitely broken up; the flag-ship, the first-class battle-ship "Revenge," having brought Rear-Admiral Dale home, who has now struck his flag, will take the new Commander-in-Chief of the Mediterranean to Malta, and will then become the flag-ship of Rear-Admiral Harris, the Second-in-Command, who will shift his flag to her from the "Trafalgar," the last-named ship remaining on the station as one of the squadron. Both the Admiral Commanding and the Rear-Admiral will now have their flags flying in similar ships, while the station is strengthened by the addition of a first-class battle-ship. The "Royal Oak," the battle-ship of the other squadron, has also returned to Portsmouth, and is to be paid off, her officers and crew turning over to the "Prince George." Of the two first-class cruisers the "Theseus" remains in the Mediterranean, while the "Gibraltar" has been attached to the squadron on the Cape station and is now at Zanzibar. The first-class cruiser "Endymion" is taking out new crews for the first-class battle-ship "Anson" and the torpedo depôt-ship "Vulcan," which are to re-commission at Malta. The sloop "Beagle" has been commissioned for service on the S.E. Coast of America.

The "Majestic," flag-ship of the Channel Squadron, has been carrying out a series of progressive trials, with the following results:—First series: Revolutions, 24·46 starboard, and 24·57 port; gross total I.H.P., 223·04; speed, 4·103 knots. Revolutions, 61·07 starboard, 59·72 port; I.H.P., 2,224·27; speed, 10·357 knots. Revolutions, 73·66 starboard, 75·59 port; I.H.P., 4,116·20; speed, 12·547 knots. Revolutions, 87·03 starboard, 84·58 port; I.H.P., 7,010·48; speed, 14·305 knots. Revolutions (full power natural draught), 98.52 starboard, 97·83 port; I.H.P., 10,082·9; speed, 16,096 knots. The ship next carried out three runs with forced draught on the measured distance of twenty-three miles between Rame Head and Dodman Point, on the Cornish coast. At each run the speed was taken by observation, and the results were regarded as satisfactory by the officers of the ship. The following are the results:—First run: Air pressure in stokeholds, 1-inch; vacuum 26·3 inches starboard and port; revolutions, 103·3 starboard, 102·9 port; total I.H.P., 11,814; speed, 16·86 knots. Second run: Air pressure in stokeholds, 1·08 inch; vacuum, 26·5 inches starboard, 26·3 inches port; revolutions, 102·5 starboard, 102·4 port; total I.H.P., 11,914; speed, 16·9 knots. Third run: Air pressure in stokeholds, 1·17 inch; vacuum, 26·5 inches starboard, 26·6 inches port; revolutions, 103·6 starboard, 103·2 port; I.H.P., 11,673; speed, 16·8 knots. Mean of the three runs.—Air pressure in stokeholds,

1·08 inch; vacuum, 26·4 inches starboard and port; revolutions, 103·1 starboard, 102·8 port; I.H.P., 11,800; speed, 16·85 knots. The speed of the ship was somewhat retarded by a heavy sea and strong wind, but it will be seen that under the imposed conditions forced draught gave an additional speed of little more than three-quarters of a knot.

The new second-class cruiser "Minerva" has also successfully completed her steam trials. The result of the eight hours' run under natural draught, so far as speed was concerned, were better than in any other vessel of the same class yet tried. With only a quarter of an inch pressure in the cylinder a speed of 19·6 knots an hour was obtained, whereas the designed speed was only 18½ knots. The steam pressure in boilers was 151 lbs., and the I.H.P. 8,221, or an excess of 221. Throughout the trials the machinery worked very smoothly, and there was a noticeable absence of vibration. The results of the four hours' forced-draught trial were as follows:—Draught of water, 19 feet forward, 21 feet 3 inches aft; steam in boilers, 152 lbs.; vacuum, 27·5 starboard, 27·7 port; revolutions, 137·7 starboard, 137·5 port; I.H.P., 4,968 starboard, 4,923 port—total, 9,891; mean air pressure in stokeholds, 1·02 inch; speed by patent log, 20·34 knots. The steam power and speed were in excess of that attained by any other vessel of the same class, and were also in advance of the contract stipulations. On the thirty hours' continuous coal consumption trial the results were:—Draught of water, forward, 18 feet 8 inches; aft, 21 feet; steam pressure in boilers, 146 lbs. per square inch; vacuum in condensers, 28·5 starboard, 28·4 port; revolutions per minute, 111·5 starboard, 111·7 port; mean I.H.P., 2,437 starboard, 2,482 port—total, 4,919; consumption of coal, 1·7 lb. per I.H.P. per hour. The machinery was run at half-power throughout the trial. The average speed was 17·52 knots by patent log, which is nearly three-quarters of a knot more than the sister-ships attained on similar trials.

The new second-class cruiser "Diana" has also successfully completed her trials, and even better results both as to speed and power were obtained than in the case of the "Minerva," the performances of which ship constituted a record for this type of vessel. The results of the eight hours' run under natural draught were as under:—Draught of water, forward, 19 feet 6 inches; aft, 21 feet 6 inches; steam pressure in boilers, 145 lbs. per square inch; vacuum in condensers, 26·4 starboard, 26·9 port; revolutions per minute, 136·8 starboard, 135·8 port; I.H.P., 4,206 starboard, 4,046 port—total, 8,252; speed of ship, 19·72 knots; consumption of coal per I.H.P per hour, 2·25 lbs. The results of her forced-draught trial also proved very successful. The engines were designed to indicate 9,600-I.H.P., with a speed of 19·5 knots, but the result of a four hours' run gave a mean of 9,875-I.H.P., with a speed of 20·16 knots. The results of the coal consumption trial were as follows:—Draught of water, 18 feet 9 inches forward; 21 feet 6 inches aft; speed of ship, 17·24 knots; steam pressure in boilers, 142 lbs. per square inch; vacuum in condensers, 26·6 starboard, 26·9 port; revolutions per minute, 116·2 starboard, 116·0 port; mean I.H.P., 2,459 starboard, 2,457 port—total, 4,916; consumption of coal, 1·47 lb. per I.H.P. per hour. In carrying out her required thirty hours' continuous run the "Diana" steamed from the South Foreland to the Lizard and back.

The new first-class cruiser "Powerful" completed last month two of her trials successfully. She was first run for thirty hours at 5,000-I.H.P., or one-fifth of her maximum H.P. The run was made between Brighton and the Start in the English Channel, and fine weather with a moderate breeze was experienced. Although in addition to the main machinery thirty-four out of the ninety-five auxiliary engines that the ship contains were in constant use, there was no difficulty in maintaining the required H.P. with sixteen out of the forty-eight boilers, and when four runs were made over the measured mile in Stokes Bay the ship made an average

speed of 14·35 knots. In the first and third hours against the wind and with the tide the speeds respectively were 15·39 and 15·0, and in the second and fourth hours against the tide and with the wind the speeds were 13·53 and 13·80, with 5,200-I.H.P. The mean temperature in the stokeholds was about 85°, but when going head to wind the temperature in the engine-room was quite cold. The revolutions varied according to the force of wind with or against the ship from 66 to 69 per minute, and the I.H.P. ranged from 4,850 to 5,200, both port and starboard engines contributing a remarkable equality of power. At no period in the trial did the engines give the least trouble, whilst the highest point reached in the coal consumption was 2·6 lbs. per I.H.P., but this comparatively high rate was due to several fires and tubes being cleaned at the same time. The official report of the trial showed that the draught of water was 27 feet 3 inches forward and 27 feet 2 inches aft, and the steam in the boilers was 225 lbs. to the square inch, the vacuum being 26·8 inches starboard and 27 inches port, while the mean revolutions were 67·4 starboard and 67 port per minute. The average I.H.P. was 5,008, and the speed by patent log 14 knots.

In the second trial, which was the severest any war-ship has yet accomplished, the ship steamed for thirty consecutive hours at an average of over 18,000-I.H.P. Leaving Spithead at 6 o'clock on the morning of the 13th ult., by 8.30 the engines had worked up to the stipulated H.P., and the trial then commenced. Start Point was reached by 1 o'clock, and the ship headed at once for the measured distance of twenty-three miles between Rame Head and Dodman Point, over which these runs were made at 18,000-H.P. at a mean speed of 20·6 knots. When darkness set in a due westerly course was taken in order to avoid the track of vessels in the Channel, and the ship steamed to a point about sixty miles beyond the Scilly Islands, where she turned and got on the measured distance on the Cornish coast at 8 o'clock the next morning. Three other runs were then made, when the engines were working at 18,650-I.H.P., and a mean speed of 21 knots was recorded. At the 5,000-H.P. trial the coal consumption was 2·07 lbs. per I.H.P. per hour, but at the second trial it was reduced to 1·838 lbs. The trial showed that, taking the coal consumption per I.H.P. per hour as the criterion, 15,000-I.H.P. would give the economical speed, while a careful calculation proved that during the trial the cost of producing the steam, including coal and labour, was an infinitesimal fraction under one penny per revolution, each revolution propelling the ship a distance of 20 feet. As in the previous trials, there was practically no bow wave, and from first to last there was an ample supply of steam, while the machinery gave no trouble of any kind. The draught of water forward was 27 feet, and aft 27 feet 4 inches, and the amount of steam in boilers 232 lbs. per square inch. The starboard vacuum was 26·7 inches, and port 26·5 inches, while the revolutions were 103·62 starboard and 101·98 port per minute. Both engines gave a fairly equal amount of power, the starboard being 9,188 and the port 9,245, or a collective I.H.P. of 18,433.

The new torpedo-boat destroyer "Swordfish," built at the Elswick Works, has completed her full-power trial. The official record is as follows:—Draught of water, 5 feet 1½ inches forward, 7 feet 6 inches aft; speed of ship, 26·702 knots; steam pressure in boilers, 199 lbs. per square inch; air pressure in stokeholds, 2·66 inches; vacuum in condensers, 24·2 starboard, 24·4 port; revolutions per minute, 398·5 starboard, 392·7 port; mean I.H.P., 2,208 starboard, 2,227 port—total 4,435. It will thus be seen that, although the contract H.P., 4,000, was exceeded, the "Swordfish" failed to attain the required speed, 27 knots, by over a quarter of a knot; but the trial took place in boisterous weather and a rough sea. It is understood that another trial will take place.

The new torpedo-boat destroyer "Sparrowhawk," built by Messrs. Laird Brothers, of Birkenhead, has also completed her official full-speed three hours',

trial on the Clyde, and the results of the trial were considered by the Admiralty authorities present to be satisfactory. The mean speed on the measured mile was 30·2 knots with 364 revolutions, and the recorded speed for the three hours' continuous steaming was 30·68 knots, being considerably in excess of the contract.

The new third-class cruiser "Pelorus" has completed her thirty hours' coal consumption trial. The engines and boilers worked very successfully throughout the trial. With the engines recording 161 revolutions per minute a mean of 3,567 H.P. was registered for the thirty hours' run, with an average speed of 16·13 knots.

The second-class cruiser "Amphion" at Devonport has had a trial of her machinery since her general overhaul. Three previous trials have proved unsatisfactory, on one occasion because she failed to realise more than 4,000-I.H.P., and on another because leaky joints prevented a vacuum in the condensers. Under ordinary circumstances the vessel would have steamed for two hours only, but in consequence of her repeated breakdowns the Admiralty directed that she was not to be regarded as efficient until she had satisfactorily completed four hours' high-power steaming. The results at the last trial were highly satisfactory, the mean I.H.P. for the four hours being 5,105, or 105-I.H.P. more than was actually required. The condensers also gave gratifying results, the mean vacuum recorded being 26·5 inches. During the run the vessel covered a distance of 63 knots, or about 16 knots an hour.

The "Salamander," torpedo-gunboat, recently employed as tender to the "Alexandra," guard-ship at Portland, is to be at once taken in hand at Devonport Dockyard for the substitution of water-tube boilers for her locomotive (wet-bottomed) boilers. The new boilers are to be of the Thornycroft type, and are being made at Chiswick, and will be delivered at Devonport next month. The "Salamander's" refit will cost about £23,000, and is to be completed before the 31st of March next. The "Sheldrake," torpedo-gunboat, tender to the "Galatea," guard-ship, Hull, will shortly be paid off, and sent to Devonport to undergo a similar refit. The "Sheldrake" will be supplied with a set of the Babcock and Wilcox type. New sets of boilers of water-tube design have been ordered for the torpedo-gunboats "Seagull" and "Skipjack." The work of reboilering the "Seagull" will be carried out at Portsmouth, and that of the "Skipjack" at Chatham. It is estimated that the cost of reboilering these four gun-boats and preparing them for further sea service will amount to over £95,000.

On the 20th ult., the new first-class cruiser "Diadem" was launched from the yard of the Fairfield Shipbuilding Company at Govan, on the Clyde. The contract for the "Diadem" was placed last November, and her keel was laid down in January of this year, so that her construction has occupied only ten months, which is a record as far as this type of ship is concerned. Three other vessels of the same dimensions and arrangement were ordered along with the "Diadem," and are building at Clydebank, Barrow, and Pembroke respectively. They are named the "Europa," "Niobe," and "Andromeda." The dimensions of the "Diadem" are as follows:—Length between perpendiculars 435 feet, on the load waterline 455 feet, beam 69 feet, and depth moulded 39 feet 9 inches, with a displacement of 11,500 tons, on a mean draught of water of 25 feet 3 inches. The hull is built of steel throughout, and is sub-divided longitudinally and transversely by numerous bulkheads, while the double bottom extends from end to end. Externally the hull is encased with 4-inch teak planking from the keel to about 4 feet above the normal load-water line, and this will eventually be covered with copper sheathing. The steel protective deck, which extends throughout the whole length of the ship, is arched transversely, so that at the sides of the vessel it is about 7 feet below the water-line, while at the fore and aft

middle line it rises to a height of 3 feet above the water. This deck, which varies in thickness from 6 inches to 3 inches, covers the machinery, boilers, magazines, stores, etc. The "Diadem" is intended to steam, with full boiler power, at 20·5 knots, and she will be fitted with two sets of triple-expansion engines, capable of developing collectively 16,500-H.P. Each set drives a separate bronze propeller, and has four cylinders, the diameters being 34 inches, 55½ inches, and two at 64 inches, the stroke in each case being 48 inches. The engines are designed to run at 110 revolutions, giving a piston speed of not less than 880 feet per minute. Steam will be supplied from thirty Belleville water-tube boilers, having an aggregate heating surface of 45,920 square feet, and a grate surface of 1,450 square feet. The total weight of the boilers will be about 720 tons, and the propelling machinery will weigh 1,530 tons. The normal bunker capacity is 1,000 tons, but if required arrangements have been made whereby double this amount of coal may be carried. The armament is to be composed of Q.F. guns entirely, and she will carry sixteen 6-inch and fourteen 12-pounders, twelve 3-pounders, and eight Maxim machine guns, besides three torpedo discharge-tubes, of which two are submerged.

The contracts for the three first-class cruisers authorised to be built in private establishments under the current Naval Programme have been fixed. The "Argonaut" will be constructed by the Fairfield Shipbuilding and Engineering Company, Govan; the "Ariadne" by Messrs. J. and G. Thomson, Clydebank; while the "Amphitrite" will be built at Barrow-in-Furness by the Naval Construction and Armaments Company. The fourth vessel, to be called the "Spartiate," is to be built at Pembroke. All four vessels bear names associated with the old Navy. The "Argonaut" and "Spartiate" were the names of two ships originally captured from the French, while the "Amphitrite" was a frigate captured from the Spaniards. The name "Ariadne" was first given to a frigate built in 1777, while the last ship to bear the name was the fine 26-gun frigate commanded some thirty-five years ago by that smart officer Captain (now Vice-Admiral) Vansittart; her sister-ship was the "Galatea," commanded at one time by the Duke of Edinburgh. Their length between perpendiculars will be 435 feet; beam, extreme, 69 feet; moulded depth, 39 feet 9 inches; and displacement in sea-going trim, 11,000 tons, on a mean draught of water of 25 feet 3 inches. They are to be built of steel throughout, on the cellular double-bottom principle, with bronze stem and stern posts. The hulls externally will be covered with teak sheathing. In each vessel the engines will be similar, and although the diameters of the cylinders are to be the same as the cruiser "Andromeda," building at Pembroke, the power to be developed is greater by 1,500-H.P. This is consequent upon the greater piston speed at which the engines are designed to run. The four-crank triple-expansion type has been selected, the diameter of the high-pressure cylinder being 34 inches, the intermediate 55½ inches in diameter, and the two low-pressure cylinders each of 64 inches diameter, with a common stroke of 4 inches. At full power the maximum revolutions will be 120 per minute, the resulting H.P., with a boiler pressure of 300 lbs. per square inch, being 18,000, which is deemed sufficient to realise a speed of 20¾ knots. Steam will be supplied from thirty Belleville water-tube boilers, having an aggregate heating surface of 47,850 square feet, the corresponding grate area being 1,390 square feet. The total weight of machinery and boilers is fixed at 1,525 tons, or rather more than a fourth of the total displacement of the ship. All the propelling machinery will be situated beneath the protective steel deck, which varies in thickness from 4 inches on the slopes to 2½ inches in the crown, and extends from stem to stern of the ship.

The armament with which each vessel is to be equipped is of the most powerful description, and includes sixteen 6-inch Q.F. guns, twelve 12-pounders, three 3-pounders, and eight Maxim machine guns. In addition the hull is pierced

foreward for two submerged torpedo discharge-tubes, and one above-water tube for direct fire astern. Each cruiser will have two pole masts, and the products of combustion from the boilers will be carried off by four funnels.—*The Times* and *Naval and Military Record.*

FRANCE.—The following are the principal appointments and promotions which have been made: Vice-Admirals—A. Gervais to be Inspector-General of the Navy; E. Humann to Command of the Reserve Squadron of the Mediterranean. Rear-Admirals—G. Roustan to be Director of the Superior School of the Navy; E. T. MacGuckin de Slane to the Naval Command in Algeria. Capitaines de Vaisseau—C. Aubry de la Noë to be Rear-Admiral; L. Valery to "Dupuy de Lôme"; A. Boué de Lapeyrère to "Hoche"; E. Gadaud to "Brennus"; E. Boisse to "Amiral-Duperré." Capitaines de Frégate—J. Nény to "Amiral-Rigault de Genouilly"; A. Babeau, O. Richard d'Abnour, J. Philibert, A. Salaun-Penquer to be Capitaines de Vaisseau.—*Le Moniteur de la Flotte.*

Vice-Admiral Gervais relinquished the command of the Active Mediterranean Squadron on the 14th October, and Vice-Admiral de Cuverville hoisted his flag in command on board the "Brennus" the next morning. Vice-Admiral Parrayon took command of the Northern Squadron on the 1st November, succeeding Vice-Admiral de Prémesnil. Vice-Admiral Humann has been appointed to the command of the Reserve Mediterranean Squadron. The appointment had been expected for some time, but its publication was delayed owing to the state of depletion of the squadron. According to French usage, a vice-admiral's command should consist of two divisions of not less than six battle-ships with a proportion of cruisers and torpedo craft. The Reserve Squadron at Toulon, however, at present consists of only two battle-ships, the "Amiral-Duperré" and "Friedland," two coast-defence vessels, the "Caïman" and "Terrible," and one cruiser, the "Latouche-Tréville."

It has, however, been decided to nominate Vice-Admiral Humann to the command, with a view of keeping up the principle that a vice-admiral should command the second line in the Mediterranean; and it is hoped that the "Charles-Martel" and "Carnot," battle-ships, and several cruisers now completing may soon be brought into service, when it will become possible to reinforce the Reserve Squadron.

The new first-class battle-ship "Gaulois" was launched at Brest on the 6th ult. She is a sister-ship of the "St. Louis," launched at Lorient on the 6th September, and of which we gave the principal details in last month's Notes. The "Gaulois" has only been ten months on the stocks, a record in French ship-building, but she is little more than a shell, and according to present arrangements is not to be completed before July, 1899. The third-class cruiser "Amiral-Rigault de Genouilly" is to be commissioned at Brest to relieve the "Roland" in the Atlantic Division; both vessels are old, and built of wood.

The new second-class cruiser "Pascal" has been undergoing her trials at Toulon. With the engines developing 7,232-I.H.P., a mean speed of 18·5 knots was maintained for three hours, the consumption of coal per I.H.P. per hour being 0·838 kilogramme, and for a square metre of grate surface per hour 93·019 kilogrammes. The first-class battle-ship "Formidable," lately the flag-ship of the Active Division of the Mediterranean Squadron, is having new boilers placed on board at Toulon, and is undergoing some important modifications. Her centre 75-ton gun, with its barbette, has been removed, and will be replaced by four 6·3-inch Q.F. guns in armoured casemates. As the temperature of the magazines of the new second-class cruiser "Descartes" rises to 111°, or 16° above the maximum compatible with the safe carriage of explosives, the contractors have been ordered to improve the ventilation before the ship is accepted. The new first-class battle-ship "Charles Martel"

has been continuing her trials at Brest. With the engines developing 5,382-I.H.P. a speed of 13·8 knots was obtained, the coal consumption per I.H.P. per hour being 8·631 kilogrammes. The first-class cruiser "Jean Bart" is to have some important alterations carried out in her at Brest; her military masts are to be removed and replaced by a couple of simple poles; the small Q.F. guns up to the present carried in her fighting tops will be divided between the spar deck and bridges; the military masts are to be removed in consequence of steel shields having lately been fitted to her guns, thus materially adding to the original weight of the ship above the water. A further defect has been discovered in the new second-class cruiser "Descartes," it having been found that when fired much before or abaft the beam the blast from the 6-inch Q.F. chase guns endangers the guns' crews of the 4-inch guns placed foreward and aft on the upper deck, and even the people on the fore bridge. The new torpilleur-de-haute-mer "Mangini," at her trials off Lorient, attained a speed of 27 knots, exceeding the contract speed by 2 knots; she has been built by the Société des Ateliers de la Loire. The new torpedo-depôt-ship "Foudre," at her full-speed forced-draught trials, maintained a mean speed of 19·9 knots for the three hours; it has not yet been definitely decided to what use she is to be turned. Of the three ships which lately formed the Superior Training School, the first-class armoured-cruiser "Amiral-Charner" and the second-class cruiser "Suchet" are to be attached to the Active Squadron of the Mediterranean Fleet; while the third, the armoured-cruiser "Latouche-Tréville," is to join the Reserve Squadron.

The second-class cruiser "Catinat" was launched at Havre, from the yard of the Société de la Méditerranée, on 8th October. She is a sister-vessel to the "Protet" now building by the Société de la Gironde at Bordeaux, and her dimensions are as follows:—Displacement, 4,065 tons; length, 101 metres (330 feet); beam, 14 metres (45 feet 6 inches); mean draught of water, 6 metres (19 feet 6 inches). She has twin screws worked by triple-expansion engines of 9,000-I.H.P., and her estimated speed is 19 knots; the engines are vertical triple-expansion and the boilers are of the Belleville water-tube type. The coal supply is 384 tons, giving a radius of action of 6,000 miles at 10 knots and 1,000 miles at full speed. For protection there is a 2·5-inch steel deck, and the guns have 2-inch steel shields. Her armament comprises four 16-centimetre (6·2-inch) guns, four 10-centimetre (3·9-inch), ten 47-millimetre, and ten 37-millimetre, all Q.F.'s, and she has two submerged torpedo-tubes. She is to be completed in February, 1897, and her total cost is 8,079,302 francs.

The reports of the gun trials of the torpedo-aviso "Dragonne," converted into a special kind of gun-boat, have now been published.

The not (it would seem) very novel idea of mounting a single heavy gun in a small vessel, was first proposed during the Ministry of the late Admiral Aube in 1886, and a small vessel of 80 tons, named the "Gabriel Charmes," was constructed to mount a gun of 14 centimetres (5·5 inches). The trials with this vessel, however, did not excite any special interest, and the matter dropped. Under M. Lockroy's Ministry the idea was again taken up, but instead of constructing a special vessel, the "Dragonne," of 395 tons was utilised, and a shell gun of 155 millimetres (6 inches) mounted on a land carriage was placed on board.

In the trials recently carried out five shots fired at a range of 5,200 metres all fell within a rectangle of 400 metres. These results, it is said, show that this type of vessel could do serious damage to a coast fortress, while the fire of the fort at so small an object would be relatively harmless.

Further experiments are shortly to be carried out off Toulon, and will consist of night firing at a short range of about 400 metres at a ship-target, the old transport "Panama," which is to be moored off Cape Brun, being used for the purpose.

A regrettable accident took place on the 26th October at the Polygone du Hoe, near Havre, during the trials of some new 65-millimetre (2·5-inch) Canet guns constructed for the Greek Navy. Late in the evening, near the conclusion of the trials a Q.F. cartridge jammed, and an attempt was made to force it home by closing the breech forcibly; in doing this the cartridge exploded and blew out the breech-piece, killing M. Brindeau, Engineer of the Forges et Chantiers, as well as a workman, on the spot, and seriously wounding a Greek naval officer and another person.

The new ship-building programme for 1897, which has been approved by the Budget Commission, is as follows:—

One second-class battle-ship.
One first-class fleet cruiser.
One first-class station cruiser.
One torpedo-boat destroyer.
One gun-boat.
Six first-class torpedo-boats.

The battle-ship "A 3" will be built at Brest, and will be similar to the "Henri IV.," building at Cherbourg. Her displacement will be 9,000 tons; she will have water-tube boilers, and her speed is to be 17 knots; her armament and its disposition on board have not yet been settled; cost, exclusive of armament, 18,449,400 francs.

The first-class fleet cruiser "C 3" will be built at Toulon, she will be an armoured cruiser, similar to the "Jeanne d'Arc" building at that port. Her displacement will be 11,270 tons; with a length of 460 feet, and a beam of 61 feet. The engines will be vertical triple-expansion, driving three screws, and the boilers are to be of the Normand water-tube type, while the engines are to develop 28,500-I.H.P.; speed, 23 knots; radius of action at 10 knots, 13,500 miles, and 2,000 miles at full speed. Armament—two 19-centimetre (7·4-inch), eight 14-centimetre (5·5-inch) Q.F., twelve 10-centimetre (3·9-inch) Q.F. guns, and twenty-four 3-pounder and 1-pounder Q.F. guns, with two under-water torpedo-tubes; cost, 24,673,771 francs. She will be wood-sheathed and coppered.

The first-class station cruiser "D 2" will be built at Lorient. Displacement, 5,500 tons; with a length of 438 feet and a beam of 48 feet. The engines are to be vertical triple-expansion, driving three screws and developing 17,100-I.H.P., and the boilers will be Normand water-tube, giving a speed of 23 knots. Armament—eight 16-centimetre (6·2-inch), twelve 47-millimetre guns, and two submerged torpedo-tubes; cost, 10,674,811 francs. She also will be wood-sheathed and coppered.

The plans of the destroyer "M 2" are not yet completed, but she will have a speed of 26 knots, and a radius of action of 2,500 miles at 10 knots.

The gun-boat "T 1" will be similar to the "Surprise" now attached to the Northern Squadron.

Of the six first-class torpedo-boats, four will be built in the arsenals of Cherbourg and Toulon, it being the first time that torpedo-boats have been built in a Government yard. The two other boats will be built by contract.—*Le Temps, Journal des Débats, Le Yacht,* and *Annexe No. 6 du Projet de Loi (Budget des Dépenses du Ministère de la Marine).*

The "Jauréguiberry," a photograph of which ship forms the frontispiece, is one of a group of five first-class battle-ships, all more or less of the same type; the other ships being the "Bouvet," "Carnot," "Masséna," and "Charles-Martel." Her dimensions are as follows:—Length, 356 feet; beam, 72 feet 6 inches; and with a mean draught of 27 feet 8 inches she has a displacement of 11,824 tons. She is fitted with two triple-expansion engines, driving twin screws of manganese bronze, and steam is supplied by twenty-four groups of the D'Allest and Lagrafel boilers. Her estimated speed with natural draught and 13,000-I.H.P. is 17 knots, and with forced draught and 14,200-I.H.P. 18 knots. The four heavy

guns are disposed one forward, one aft, and one on each beam in covered barbette turrets. The two foreward and aft are each 11·8-inch 44-ton guns; those on the beam are on sponsons and are each 10·8-inch 34-ton guns. All the other guns are Q.F. ones. On either side, a little abaft the fore turret, and a little before the after one, is a small turret containing a pair of 5·4-inch 3-ton guns. In addition, there are four 6-pounder Q.F., twelve 3-pounder, and eight 1-pounder Q.F. guns distributed on the upper deck and superstructure, and in the tops on the two military masts. There are also six torpedo-tubes, of which two are submerged.

The armour includes a 17·7-inch all-round belt of steel at the water-line, which is brought down forward to the point of the ram, and is surmounted by a belt of 3·9-inch armour, which protects the slope and edges of the armoured deck, which is of steel, 2·75 inches thick. The armour of the large turrets, which is 15·7 inches thick, is carried down to the protective deck; that of the small turrets for the 5·4-inch guns is 3·9 inches thick. All the eight turrets are constructed upon M. Lagane's balanced system, and no matter the direction in which they may be trained, the trim of the ship is in no way affected. A remarkable feature of the "Jauréguiberry" is the extensive use of electricity as a motive power; the turrets, ammunition lifts, and many of the other auxiliary engines usually worked by steam or hydraulic power, are worked by electricity, which also supplies the current for 550 incandescent lamps and six powerful Mangin search-lights. The armament of the "Jauréguiberry" is so arranged that she can fire two 11·8-inch, one 10·8-inch, and four 5·4-inch guns simultaneously at any point on either beam, in addition to numerous small Q.F. guns, and can bring to bear upon any point ahead or astern, one 11·8-inch, two 10·8-inch, and four 5·4-inch guns, besides smaller guns.

We noted last month that the "École supérieure de Guerre de la Marine" had been undergoing a very searching inspection at Toulon at the hands of Vice-Admiral Ricunier, specially deputed for the purpose, and that it was generally thought that this inspection was only a prelude to its suppression. A decree to this effect has since been published, together with an ordinance creating in its place an advanced naval school at Paris to be known officially as the "École des Hautes Études de la Marine." Rear-Admiral Roustan has been appointed to the control of the new naval school in Paris. These changes do not appear to have been received with unqualified approval, and the opinion seems to be that in any case the six months which it has existed has not been long enough to give the "École supérieure de Guerre" a fair trial, and that it should have been allowed to continue for the full period of eighteen months. Some of the French papers make very merry over the teaching of naval officers their duties in Paris instead of afloat. The most serious objection to having an "École de Guerre" afloat, which apparently has chiefly influenced the authorities in making this change, is the inconvenience of having three of the finest cruisers detached from the fleet and not available for ordinary duties. Quite recently it has been necessary to reinforce the French squadron in the Levant and also to send two cruisers to Marocco, and the want of cruisers in the fleet to fulfil these duties has been much felt.

In recommending these changes, Admiral Besnard, Minister of Marine, wrote officially as follows:—

"By a decree of the 27th of last December, on the proposal of my predecessor, an 'École supérieure de Guerre de la Marine' was created on board three cruisers detached from the fleet to form a division.

"This 'École de Guerre de la Marine' was intended to be similar to the 'École de Guerre,' under the War Department (the French Staff College).

"The analogy is not absolute, the requirements of the Navy in this respect being very different from those of the Army.

"In the Army the division of forces into infantry, cavalry, artillery, and engineers necessitates that staff officers should receive a corresponding instruction.

"In the Navy the instruction is of one kind only, and the true school for naval officers is afloat in a fleet where practical questions and naval tactics can be more favourably studied than in a division composed solely of cruisers.

"These considerations have led me to seek in a somewhat different organisation the means for developing the instruction of our officers.

"If a certain number of carefully selected officers are given the time and the necessary facilities for studying questions of a higher order connected with the Navy it is preferable to give up a school afloat, and create at Paris, where all the best sources of instruction are to be obtained, a school of advanced naval study.

"The course of instruction at the new school will have a duration of eight months, but at the end of the course it will be necessary for officers who have completed it to be embarked for two months' instruction in the fleet, where they will find the practical application of their studies.

"Entry into the new school will be by competition, and as this will require hard study it is only fair that the successful candidates should be accorded certain advantages.

"These advantages will accrue to officers while serving in the rank of lieutenant, their success in the future will then be guaranteed without any necessity for providing for their advancement in the higher ranks."

In the published ordinance for the creation of the new school, the following are the chief points.

Lectures will be given on such subjects as:—

The French Navy, Tactics and Strategy, Naval Construction, Engines and Boilers, Electricity, Torpedoes, Artillery, Administration, Foreign Navies, Astronomy, Meteorology, Naval International Law.

Officer students at the school will receive their pay, and an allowance for living in Paris.

Lieutenants of not more than three years' seniority serving in France or Algeria or embarked in the fleet are allowed to compete for the entrance examination.

The examination will be in writing on the following subjects:—

1. General knowledge as a naval officer.
2. An essay on a given subject.
3. The resolution of a trigonometrical expression.

It will be conducted simultaneously at the five military ports, in Algeria, and in the fleet.

Officer students will serve twelve months in the school, apportioned as follows:—

Eight months in Paris, 1st November to 30th June.
Two months in the fleets, July and August.
Six weeks visiting the arsenals.
Two weeks passing out examination.

Officers gaining the diploma will be taken off the embarkation list and detailed for service by seniority as follows:—

1. One for each section of the general staff of the Navy in Paris.
2. One on the staff of each admiral in command, or maritime prefect.
3. Embarkation at their own selection on battle-ships or first-class cruisers.

On giving up their appointments they take their place by seniority on a special list, and when promoted to a higher rank return to the ordinary conditions of the service.—*Le Temps.*

ITALY.—The following appointments have been made: Rear-Admirals—B. Mirabello to Command of Second Division of the Reserve Squadron; L. Palumbo to Command of Flying Squadron. Captains—A. Rebaudi to Chief of the Staff of the Third Maritime Department (Venice); A. Resasco promoted to Rear-Admiral. —*Gazzetta Ufficiale.*

Vice-Admiral Morin, in command of the Reserve Squadron, has transferred his flag from the first-class battle-ship "Re Umberto" to the "Lepanto." Rear-Admiral Mirabello, appointed to Command of the Second Division of the same squadron, is to hoist his flag in the ram-cruiser "Fieramosca." Rear-Admiral Palumbo has hoisted his flag in the first-class armoured cruiser "Marco Polo" in command of the Flying Squadron, which is composed of the following vessels:—

Armoured ram-cruiser—"Marco Polo" (flag-ship).
Ram-cruisers—"Umbria," "Elba."
Corvettes—"Amerigo Vespucci," "Volta."

The following account of the Naval Manœuvres[1] has been compiled from *L'Italia Marinara*:—The ships of the Attacking or Yellow Squadron, consisting of the battle-ships—"Re Umberto" (flag-ship of Commander-in-Chief), "Lepanto," "Italia" (flag of Rear-Admiral Gonsalez), and "Ruggiero di Lauria"; the torpedo-ram-cruisers—"Fieramosca" and "Stromboli"; the torpedo-cruisers—"Calatafimi" and "Euridice," with the torpedo-avisos—"Nibbio," "Avoltoio," "Aquila," "Falco," "Sparviero," and twelve torpedo-boats, the whole under the orders of Vice-Admiral Morin, had already been assembled for some days in the roadstead at Spezia, when on the 13th of August the First Division of the Defending or Green Squadron, consisting of the battle-ships—"Sicilia" (flag-ship of Commander-in-Chief) and "Sardegna"; the torpedo-ram-cruisers—"Marco Polo" and "Piemonte"; the torpedo-cruiser "Partenope" and twelve torpedo-boats, under Vice-Admiral Canevaro, arrived and took up their moorings, followed on the 15th by the ships of the Second Division, consisting of the battle-ships—"Morosini" (flag) and "Andrea Doria"; the torpedo-cruisers—"Giovanni Bausan" and "Tripoli," with six torpedo-boats, under the command of Rear-Admiral Gualterio. Admiral H.R.H. the Duke of Genoa arrived at Spezia from Livorno on the evening of the 19th to take over the supreme command, and was waited upon by all the admirals' staffs in ordinary uniform at the railway station. The next day His Royal Highness conferred with the Commander-in-Chief of the First Maritime Department and with the senior officers of the two squadrons. On the 21st, at 9 o'clock, the Prince went on board the Royal Yacht "Savoia," accompanied by his adjutants and Captain Bettolo, his chief of the staff, and hoisted his flag at the main under the usual salutes. After the salute the admirals and their staffs were presented on board the "Savoia," followed immediately by His Royal Highness's visit to the commanding officers of the two squadrons on board their own ships, in accordance with the regulations. On the 20th and 21st the weather was stormy, with frequent rain in torrents, a rough sea with variable wind, and the scirocco predominating, fresh at intervals, with thunder and lightning.

The same day as he embarked, the 21st, His Royal Highness notified to the two squadrons that he assumed the superior directorship of the naval manœuvres, and gave orders that the Second Division of the Yellow Squadron, under Rear-Admiral Gonsalez, should leave next day, 22nd, for Cagliari, the immediate place of assembly assigned to it; that the whole of the Active (Green) Squadron, under Vice-Admiral Canevaro and Rear-Admiral Gualterio, should leave on the morning of the 23rd for Maddalena, the assembling position for the Green; and that the remaining First Division of the Yellow, under Vice-Admiral Morin, should leave in the afternoon of the same day for Vado, the other place of assembly for the Yellow. The ships left Spezia at the times and in the order specified through the northern passage, in line ahead.

[1] For theme of the manœuvres and composition of the opposing fleets, *see*—Italy; September Naval Notes.

His Royal Highness at the same time, in order not to limit too closely the zone of action for the Yellow Squadron at the commencement of hostilities, fixed the northern limit during the war operations as the line from Cape Mele to Cape Corso, instead of that from Vado to Cape Corso. The arrival of the above-mentioned naval forces at their respective bases was successively communicated to the "Savoia" with regularity and promptitude by the semaphores at Cagliari, Maddalena, and Cape Noli.

On the 24th, the "Savoia" with the torpedo-cruiser "Elba," attached to her for special service, left their moorings at Spezia about 9 p.m., and when clear of the mole shaped a course for Port San Stefano at about 10½ knots, the "Elba" taking station astern of the "Savoia"; San Stefano being the temporary base of observation of the Commanding Admiral. The two ships were favoured with splendid weather, and exhanging signals with the stations Palinarola and Giglio came to an anchor at San Stefano at 8.46 on the 25th, and communicated by signal flags with the Monte Argentario signal station. On the 26th, the Admiral telegraphed to the squadrons that hostilities must be understood to commence at 10 o'clock on the following day, and on the morning of the 26th he ordered by telegraph the whole of the naval forces to be under way by 4 p.m., the first step in the general engagement. His Royal Highness, attended by his chief of the staff, Captain Bettolo, visited the semaphore of Monte Argentario and personally assisted in the communications with the Giglio semaphore by optical signals. The 27th continued fine, and the "Savoia" and "Elba" weighed and proceeded for the probable theatre of war, or the first tactical contact of the squadrons.

During the night of 26th August, the torpedo-cruisers and their signals being masked by the darkness and the slight sea, two torpedo-boats, Nos. 102 and 134, belonging to the Green Squadron of the defence, unfortunately came into collision whilst changing course in carrying out their duty of watching the Piombino Channel. The "Trinacria," auxiliary umpire-ship, and the "Pagano," water-tank, immediately went to their assistance, took them in tow, and brought them to Port Longone. None of the crew were injured, and the damage to the boats although considerable was not serious, as the "Trinacria" with the appliances available on board was able to put both torpedo-boats in a condition to proceed to Spezia, with an escort as a precautionary measure. On the 27th August, the "Savoia," having been informed of the collision, made for Port Longone and there anchored; the "Elba," however, proceeded to reconnoitre between Palmiola, and Punta della Vita, being recalled by semaphore from Monte Rosso by the "Savoia" at 11 p.m., and she also anchored at Port Longone at 2.10 a.m. on the 20th August. After the departure of the "Savoia" and "Elba" from San Stefano, the weather suddenly became stormy, the scirocco blowing fresh with a considerable sea, with heavy clouds over the high land and horizon. On the 28th August, the "Savoia" left the anchorage at 10 a.m. and the "Elba" at 11, and proceeded in different directions in search of the engaged squadrons. Both ships fell in with various torpedo-boats, and the "Elba," in accordance with orders, while passing the island of the same name at the east, could perceive in the vicinity of the island of Capraia in perfect order in line ahead, the Active Squadron of the defence: "Sicilia," "Sardegna," "Marco Polo," "Morosini," "Doria," and "Bausan," with the torpedo-cruisers "Partenope" and "Tripoli" to port, cruising around the island guarding the limits Cape Corso—Capraia—Piombino, or the two passes through which one or other of the two fractions of the Attacking Squadron must pass in order to effect a junction. At 5 p.m., the "Savoia" and "Elba" anchored at Porto Ferraio, and during the night four torpedo-boats of the Green Squadron put in for shelter. On the 28th, the "Savoia" sent off with great success, as announced by the office of the Minister of Marine, a flight of carrier pigeons at a distance of 150 kilometres from the homing station in Rome. The position of the two squadrons at sunset

on the 28th, according to information in possession of the Admiral transmitted directly through the "Savoia" and "Elba" and indirectly from the signal stations and the Admiralty Office, was as follows:—

Yellow, or Attacking Squadron—First Division N. Squadron to S.W. of San Benigno, distant 30 miles, course S.W.

Second Division, S. Squadron—one part to S.W. of Giglio, distant 20 miles; the other part, position unknown.

Green, or Defending Squadron—First Division in the neighbourhood of Capraia; Second Division, ditto. Two sub-divisions of torpedo-boats in search to northward, "Trinacria" and another division watching the Piombino Channel. Weather variable, sky overcast, wind N.W., fresh, calmer at night. At 8 a.m. on 29th, the "Elba" proceeded to San Stefano for letters for the Duke, leaving again at 1.15 p.m. Off Port Longone she discovered the "Trinacria" anchored in the locality, and later rejoined the "Savoia" in the Piombino Channel 6.40 p.m. The same day, 29th, the commander-in-chief of the Green or Defending Fleet, being aware by means of his scouting service and the vigilance of the signal stations enclosing the area Ligure—Sardo—Piombino, that the passes Corsica—Capraia—Piombino to the north, and Monte Cristo—Giglio—Giannutri—Argentario to the south, were quite clear of the divisions of the Attacking Fleet (the Yellow), on the presumption that these fractions would profit by the absence of the moon, by the unsettled weather and the darkness, to effect a junction, and as the conditions were also injurious to himself on the defensive, resolved to make a resolute attack with the whole of his force on the Vado division of the enemy, to surprise it and put it out of action, by means of the tactical contact conditions laid down in the instructions; and when this task was successfully carried out to proceed with all speed to the south, and give chase to the other division. He, consequently, directed the larger and smaller ships of his squadron to proceed to the north together, and the "Trinacria" and the torpedo-boats to separate, communicating his resolution to the head office of the Marine Department at Rome by means of carrier pigeons sent off between Capraia and Vado; the same information being sent to the Commanding Admiral from the Marine Department by telegraph. At sunset on the 29th, the horizon was obscured, sky cloudy, wind variable in force from the N.W., with slight sea. At 7.15 p.m., the admiral in command of the Green with his four large and four smaller ships achieved the tactical contact with the two large and two smaller ships, and the torpedo-boats of the First Division of the Yellow, Attacking Fleet. He, therefore, attained his object, and solved the strategical problem contemplated in the first part of the scheme of war operations, in his own favour.

The Duke, who on the morning of the 30th had ordered the "Savoia" to proceed to the north from Piombino, and for the "Elba" to part company in order to obtain fresh provisions, etc., from Porto Ferraio, very soon received information of what had transpired by means of a torpedo-boat and the subsidised collier "Pino," attached to the Green Fleet. He then proceeded in the "Savoia" to San Stefano, followed by the "Elba," which had returned from her mission, ordered an armistice by telegraph to the two fleets, with instructions for the Yellow Squadron to rendezvous at Gaëta, and the Green at Port San Stefano. While contenting ourselves with a simple statement of facts, and as in duty bound refraining from any judicial verdict on them, we can at the same time affirm that the signalling arrangements, both by semaphore and by messages with carrier pigeons, as well as the telegraphic arrangements, gave the most excellent and satisfying results in every possible circumstance and fulfilled in a most gratifying manner all the duties expected of them. The First Division of the Yellow Fleet having been compelled to retire to Vado after its failure to avoid the decisive tactical contact imposed on it by the superior force of the Green, signalled the result of the encounter to the Commanding Admiral on the 30th August, loyally acknowledging the success of

the strategical operations of the enemy. The Second Division of the Yellow cruising to the south out of range of the signalling section of the enemy, sought to deceive them by appearing in sight at long distances, but did not dare to undertake a night cruise to the north, masked in some degree by the high land of Corsica; for in spite of the dense clouds which for some days had accumulated in the horizon, and added to the darkness caused by the want of moonlight, it was powerless to prevent the before-mentioned tactical victory of the Green.

The "Nibbio" and "Aquila," torpedo-boats of the first class, proceeded to Gaëta the day after the armistice was proclaimed, in accordance with which the Yellow Squadron was to assemble at Gaëta and the Green at San Stefano, to replenish with coals. The "Savoia" and "Elba" left San Stefano on the night of 31st August, and arrived at Livorno on 1st September, and immediately moored alongside the mole. At Livorno the Duke received directions from Rome to detach the "Marco Polo" and the "Elba" from his naval force, as the ships named would shortly be required for special service; the official Information Department of the Press was, therefore, immediately transferred from the "Elba" to the "Città di Milano." On the forenoon of 1st September, the damaged torpedo-boats were sighted off Livorno bound for Spezia, under escort by the "Atlante." In the afternoon official visits were exchanged with the Prefect and Commandant of the Brigade at Livorno. At midnight, His Excellency Admiral Brin, Minister of Marine, arrived. On 3rd September, the Duke issued telegraphic orders to both fleets to renew hostilities at midnight, and in consequence of the short time at disposal, owing to the fitting out of a naval division, and the festivities at the launch of the "Carlo Alberto," the theatre of war was to be restricted, and limited southwards by the line between Capo Figari (Sardinia) and Capo Circeo (Gulf of Gaëta). The objects to be obtained on the second part of the programme consisted for the Attacking (Yellow) Fleet, first, to interrupt the line of communications and to prevent the junction and co-operation of the land forces; secondly, to seek out the naval forces of the enemy, and with a superior force to bring them to a decisive engagement, and with the same end in view also to bombard the maritime cities. For the Defending (Green) Fleet, first, to guard the railway communications; secondly, to surprise the forces of the enemy, under such conditions of time and place, as to prevent him taking full tactical advantage of his numerical superiority. At the commencement of hostilities at midnight, on the 3rd, both fleets left their bases of operations, the Yellow for the Gulf of Genoa with the bulk of its force, with the object of doing the greatest possible damage along the coast, sending at the same time a sub-division of torpedo-boats to the Island of Elba with the intention of interrupting the communications connecting the Tuscan Archipelago with Piombino, and keeping the other two divisions cruising between Monte Argentario and Monte Circeo. The Green Fleet entrusted to the auxiliary ship "Pina" the laying of a line of blockade mines before Civita Vecchia to safeguard the city in case of bombardment, and with the bulk of the fleet proceeded to cruise to the north of Elba with a view to watch the movements of the enemy by help of the semaphore stations of Monte Grosso, which controlled an extensive range of view for about 30 miles distant. The "Savoia," which during this second part of the manœuvres had established her centre of information between the signal station of Portofino and Piombino, left Livorno for Porto Ferraio on the 4th, arriving at 7.30 a.m., together with the "Città di Milano." On the 4th, the Green Fleet, after concentrating at Porto Ferraio, put to sea in the evening, forming into units in order of battle, connected the one with the other by the torpedo-boats, in order to discover the intentions of the enemy, which the signal stations had stated to be *en route* to the north. The Commander trusting to the superior speed allowed by the Manœuvre Regulations, hoped to bring the bulk of the Yellow Fleet to action if possible. A few unimportant skirmishes between some of the smaller ships

occurred. On the 5th, fine weather, light wind from the east, the smaller ships "Fieramosca," "Euridice," and "Calatafimi," and two divisions of torpedo-boats of the Yellow Squadron carried out an attack on the railway communication of the littoral, Spezia—Genova, and on the submarine telegraph of the Tuscan Archipelago, and also put out of action the semaphore stations of Pianosa, Giglio, and Gorgona. The bulk of the fleet at the same time was engaged against the coast between Monte Circeo and Monte Argentario, bombarding Civita Vecchia. The Defending Green Fleet having failed to come into contact with the enemy on the night of the 5th, cruised in the waters of Elba and Ligure on the 6th, keeping a sharp look-out so as to be able to run more easily to the northward, exposed every instant to a collective attack. On the morning of the 6th, the "Bausan" of the Green Squadron, with some torpedo-boats, at 10 o'clock, chased and put out of action the "Fieramosca." The "Città di Milano" was sent on an exploring expedition to Livorno, rejoining the "Savoia" at Vado. Fresh wind from W.S.W., sea agitated.

At noon, on the 6th, the "Partenope" and the four larger ships of the Defending Squadron cruised off Spezia, shaping course to the southward. At 3 p.m. the "Partenope" was sent to communicate with the signal station at Palinaria, returning with the signal flying, "You are running into danger," or "You are nearing the enemy," the fleet at the time heading towards the Island of Elba; the "Partenope" then joined the "Sardegna" on the same course, whilst the "Sicilia," the "Morosini," and the "Andrea Doria" headed in the opposite direction in line ahead. The Attacking (Yellow) Squadron meanwhile bombarded Porto Ferraio, thereby justifying the signal made by the "Partenope" to the four larger ships of the Green, and the change of course executed by them; as by the pre-established convention they were of less speed by day than the attacking ships, and would have fallen into their power if they had gone to the rescue of the above port. The "Sardegna" detached with the "Partenope" was told off for a special task of observation so as to preserve distant contact with the enemy. The commander-in-chief of the Green by means of carrier pigeons sent off from the "Sicilia," 60 kilometres distant from their homing station at Spezia, was able to inform the Commanding Admiral that he had attempted to come into tactical contact, *i.e.*, to engage the principal forces of the enemy. The Yellow Fleet eluded the designs of the Green, but the same night, however, there were several engagements between the minor units of the fleets, the most important being between the "Tripoli" and "Trinacria" of the Green, and "Stromboli" of the Yellow. During the whole of the day, on the 7th, the Green Fleet exercised the greatest vigilance with a view of covering and being covered by the forts of Genova and to prevent being taken by surprise, and at night to force the enemy into an engagement. On the other hand, the Yellow (Attacking) Squadron continued by day to intercept the communications between the islands and the mainland, disabling the semaphore of Capraia, whilst avoiding the enemy's fleet at night. On the night of the 7th, torpedo-boat No. 133 was put out of action by the ships of the Defending Fleet. On the morning of the 8th, the Commanding Admiral intimated to both parties the cessation of hostilities, and consequently the completion of the second part of the manœuvres. The Yellow Fleet received instructions to rendezvous at Spezia, and the Green at Genova. The service for transmission of information and orders, telegraphs, semaphores, and pigeons was quite as praiseworthy for celerity and precision in the second as in the first part of the exercises. The result of the tactical exercises has not yet been made known, the judges not having had time as yet to prepare their verdict.

The two active squadrons employed in the preceding manœuvres were subsequently united for practical exercises, although it cannot be said to have been for the purpose of war operations in the sense of the first two periods, but rather as a test of the internal efficiency of single ships as regards management of the artillery,

the tactical evolutions of ships and torpedo-boats *en masse*, etc. The period itself closed with two days' exercises in presence of H.M. the King, who hoisted the Royal Standard on board the "Savoia," honouring the naval forces engaged in them with a review. The exercises comprised:—1. An attack on the fortified port of Spezia. 2. A series of tactical evolutions initiated with the review by His Majesty and completed after a series of gun practices on moving targets with the 152-millimetre, 149-millimetre, 120-millimetre, and 57-millimetre guns. The first day the two squadrons arriving from the Gulf of Rapallo, where they had assembled the day previous, found themselves at 6 a.m. at the base of the attack assigned to them before Spezia, viz., not more than 5 kilometres from the Tino—Monte Marcello limit. The whole of the torpedo-boats of the defence, divided into two squadrons each in three divisions, remained hidden in the two bays of Port Venere and Serici. The attack was begun by hauling down the flag W. (red, quartered in white and blue) hoisted at the flag-staff of the Palmaria semaphore station, in imitation of the "Savoia," which ship accompanied the hauling down by opening fire, which the forts promptly returned. The torpedo-boats moved to the attack in a similar fashion, the flag in this case being H (white and red vertical bars). At the order "Cease fire" signalled from the royal ship, the two squadrons manœuvred to take up their proper mooring positions in the harbour, the torpedo-boat proceeding at 10 knots speed to their anchorage at the end of the mole. The "Savoia" entered the gulf after the fleets had arrived.

On the second day the fleets left the anchorage at Spezia for the royal review. When the evolutions were completed the fleets went to gun practice at moving targets, the ships forming in two columns line ahead for the purpose and towing targets astern. On ceasing fire the whole of the fleet passed astern of His Majesty's ship with the engines stopped, and then proceeded to the anchorage.

On the 26th September, His Royal Highness relinquished his post of superior director on the conclusion of the manœuvres and struck his flag, after issuing the following general order:—"His Majesty the King has expressed the greatest satisfaction with the way in which the whole of the evolutions and the gun practice were carried out during the review. *Viva il Rè!*"

An enquiry has been held into the causes of the collision between Nos. 103 and 134 torpedo-boats. The commanding officers, Commander Cattolica and Lieutenant Cusani have been exonerated from all blame and commended for their resource and *sang-froid*. Lieutenants Millo and Ronca, in command of Nos. 91 and 99 boats, were similarly commended for intelligent and efficient help rendered on the same occasion.—*Italia Marinara.*

An experimental service of carrier pigeons was instituted on board the "Sicilia," "Savoia," and "Re Umberto" during the naval manœuvres this year, and gave splendid results. The weekly official *résumé* of news supplied from the information bureau on board the "Elba" states that the pigeon service, controlled by the telegraph, gave the most satisfactory results under all possible conditions. The principal centres for the pigeon service were the "Sicilia" for the Green Squadron, under the direction of an army lieutenant, and on the "Savoia" and "Re Umberto" in charge of two non-commissioned officers of the Army, assisted by non-commissioned officers of the Navy. Four flights were sent off, one from the "Sicilia" at Maddalena, fifteen hours to Rome; another from the same ship between Capraia and Vado, and two from the "Savoia" between Elba and Monte Argentario. The pigeons are kept on board in suitable cages, well ventilated, and are put on lower diet than on shore with a view to greater speed of flight. The females appear to be the best messengers for short distances, being quicker than the stronger male birds; the latter are, however, more reliable for long distances. The sexes are kept apart from each other. Every flight consists of about five pigeons and they are fed about two hours before being sent off. Bad weather, birds of prey, etc., may cause them to deviate from a direct

line, but in good conditions they can make about 77 kilometres (say 48 miles) an hour. The messages are enclosed in a small case of goose-quill, closed at the ends with wax and fastened under one of the central tail feathers. The message is written on very fine vellum, lightly rolled up and so placed that the address can be read through the case. A history sheet is provided for every pigeon, giving its date of birth, name, and number, the number of dove-cote to which it belongs, the voyages made, and if satisfactory or otherwise, good, fair, or indifferent. Its number is impressed in indelible characters in various places under the wings, the number of the dove-cote under the tail. The feeding and drinking arrangements are most ingenious, as are also the other instruments and *tools of the trade*, and the pigeons themselves from their vivacity and quickness of flight appear to be fully conscious of the importance of their high mission.—*Italia Marinara.*

UNITED STATES.—The following is the official circular issued by the Navy Department, containing the requirements for the new battle-ships, which are to be of about 11,000 tons displacement; with a length on load water line, normal displacement, of 368 feet; a moulded breadth at load water line of 72 feet; and a mean draught of 23½ feet. They are to have freeboards between the 11 feet of the "Indiana" class and the 19 feet of the "Iowa" class, about 16 feet. This freeboard was recommended by the Walker Board, which reported as its opinion that the "Indiana" was too low in the water for the operation of her guns in all kinds of weather—a criticism refuted by Capt. Evans, commanding the vessel, who says that he passed through a gale some months ago, one of the worst he has ever seen, and yet the guns of the battle-ship could have been operated without difficulty. An appropriation of $3,750,000 is made for the construction of each vessel. The armament is to be paid for out of a separate appropriation. Tenders were invited under two classes: Class 1, on plans prepared by the Department; and Class 2, on those submitted by the bidder.

The Department's design contemplates driving the vessel by twin screws. The engines to be of the vertical triple-expansion type, two in number—one on each shaft—and in two compartments. The boilers to be single-ended, eight in number, and placed in four compartments. The speed to be maintained at sea for four consecutive hours is to be not less than an average of 16 knots an hour. The hull is to be of steel, not sheathed, with double bottom and close water-tight sub-division. The arrangements of decks above water are to provide ample freeboard and berthing accommodations. It is contemplated to fit two military masts with fighting tops, to carry no sail. Each ship is to have two smoke-pipes, which are to be in line athwartships, a position much affected by the British in their vessels. The two turrets for the 13-inch guns, which are to be mounted in pairs, will be located on the central line forward and aft, and the fourteen 6-inch guns will be mounted behind a superstructure on the main deck and on an upper deck. The secondary battery of sixteen 6-pounders, four 1-pounders, four machine guns, and one field gun will be distributed about the ship where they will be of the most service. The protection of the hull against injury to the waterline region is to be afforded by means of a side armour belt of a mean depth of 7 feet 6 inches, and a maximum thickness throughout the engine and boiler spaces of 16½ inches. From thence forward it may be tapered gradually to a uniform thickness of 4 inches. The transverse armour at the after end of the belt and just forward of the boiler will be not less than 12 inches in thickness. Barbettes for 13-inch guns will have armour 15 inches thick, except in the rear, where it will be reduced to 10 inches. The turret armour is to be 17 inches thick in front, and 15 inches elsewhere. The ship's side, from the armour belt to the main deck, will be protected by not less than 5½ inches of steel armour, from barbette to barbette. Coal is to be carried back of a portion of this 5½-inch casement armour. A protective deck, ranging from 2¾ to 5 inches in thickness is to extend throughout the length of the vessel.

A cellulose belt is to be fitted along the sides of the whole length of the ship. A conning tower of not less than 10 inches in thickness, having an armoured communication tube not less than 7 inches in thickness will be carried in a suitable commanding position forward. An additional armoured station will be fitted aft, having armour not less than 6 inches in thickness. The fourteen 6-inch guns on the main and upper deck will be protected by 5½-inch armour, with 1½-inch splinter bulkheads between guns. Protection is to be afforded the sixteen 6-pounder and four 1-pounder guns by shields and extra side plating. The supply of ammunition will consist of 200 rounds for the four 13-inch guns; 2,800 rounds for the 6-inch guns; 10,000 rounds for the 6-pounders; and 2,400 rounds for the 1-pounders. The torpedo outfit is to consist of four broadside tubes, eight torpedoes, and suitable allowance of gun cotton for mines and miscellaneous purposes. The torpedo-tubes will be placed two on each broadside. The total coal bunker capacity is to be such that at least 1,200 tons can be carried with loose stowage without trimming by hand. Quarters are to be provided for 600 men.

A table is included in the circular, giving the principal weights to be carried. For the armament of the ship 550 tons is allowed; for ammunition, 437 tons; and for machinery, 1,133 tons. The other weights are distributed among torpedo outfit equipment, etc. The complement of officers and men is to be 490.

If the speed falls below 16 knots and exceeds 15 knots per hour, the vessel will be accepted at a reduction at the rate of $25,000 per ¼ knot to 15½ knots, and $50,000 from 15½ knots to 15 knots. If the speed falls below 15 knots per hour, the vessel will, in the discretion of the Secretary of the Navy, be rejected, or accepted at a reduced price.—*Army and Navy Journal.*

In the present appropriation for the Navy provision is made for the construction of three torpedo-boats to cost in all not over $800,000, and for the construction of not more than ten other torpedo-boats with a total cost limit of $500,000. The boats are to be throughout of domestic manufacture and no premium is offered for excess of speed. The three boats first mentioned are to have a speed of 30 knots an hour and to maintain an average of the same for that period under conditions to be prescribed by the Secretary of the Navy. Tenders for these boats have been invited upon plans to be submitted by the builder, including the engines as well, and the contract price is to include the boats complete in all respects excepting sea stores and ordnance and ordnance outfit of all kinds. Omitting the necessary dimensions of Q.F. 6-pounder and 1-pounder guns and torpedo discharges, together with weights and sizes of ammunition cases, the bidder is unhampered in every particular, and to his judgment and designing skill is left the planning of these craft. There will be two conning towers, one forward and one aft, in convenient positions; and accommodations will be provided for four commissioned officers and an adequate crew. The boats will be lighted by electricity, but there will be no search-lights.

The exact number, size, and speed of the smaller boats not being fixed in the Act of Congress, the Department will entertain tenders for boats of two separate types, provided always that the total cost of these boats, including ordnance supplied by the Government, does not exceed $500,000. Type No. 1 requires an average speed of not less than 20 knots, to be maintained for two consecutive hours. They will have two conning towers, or sighting hoods, placed in convenient places forward and aft. The freeboard forward to be not less than 4 feet 3 inches; and accommodation must be provided for two officers and an adequate crew. The coal capacity must be at least 16 tons.

The following approximate dimensions are given:—Length on load line, 105 feet; beam on load line, 12½ feet; mean draught, 4½ feet; displacement, about 68 tons; I.H.P., about 1,550; speed per hour, 20 knots. Armament: Two single deck

torpedo guns; one 1-pounder Q.F. gun; two auto-mobile torpedoes; 180 rounds 1-pounder ammunition.

If the speed fall below 20 knots an hour, and exceed 19 knots, the boat will be accepted at a reduced price. If below that, acceptance at a lower price will be in the discretion of the Secretary.

Type No. 2 requires an average speed of 22½ knots an hour, to be maintained for two consecutive hours.

The following approximate dimensions are given:—Length on load line, 140 feet; beam on load line, 14½ feet; mean draught, 4¾ feet; displacement, about 105 tons; I.H.P., about 1,700; speed an hour, 22½ knots. Armament: Three single deck torpedo guns; three 1-pounder Q.F. guns; four auto-mobile torpedoes; 540 rounds 1-pounder ammunition.

If the boat attain a speed of 21½ knots, she will be accepted at a reduced price. If the speed fall below that, the boat may, at the discretion of the Department, be rejected or accepted at a reduced price.—*Army and Navy Journal.*

The official report of the trial of the new armoured-cruiser "Brooklyn" has been submitted by Commodore Dewey. The general conclusions of the Board are that the vessel is sufficiently strong, and is complete and ready for delivery, except for several items, the most important of which relate to ordnance equipments. The steering gear worked well, and the vessel exhibited good tactical qualities. The time of putting the helm hard over from amidship 35° was fifteen seconds, and from hard over one way to hard over the other way, 65°, was twenty-three seconds. The angle of keel was 5°. The time occupied in making the total run of 41·5 knots north is given as 1 hour 52 minutes and 26·34 seconds; and the 83 knots running south 3 hours 47 minutes and 8·86 seconds. The tidal corrections made the distance through the water 82·9530 knots, and the mean speed of the "Brooklyn" 21·9117. During the first run the maximum revolutions of the starboard engine were 138; port, 139; average revolutions, 136·4 for starboard; port, 137·2. For the second run the maximum revolutions of the starboard engine were 138·06; port, 140; average revolutions, 136 starboard; 136·5 port.

The Russian Government some time back placed an order with Carnegie and Co. for what is known as the re-forged plate. That is a Harveyized plate re-rolled. At a previous test before the last one at Indian Head, a 10-inch re-rolled plate was the target, and a French projectile, which is the standard projectile of the European navies, was used. The projectile was a regulation 8-inch steel shot, weighing 250 lbs. It penetrated the plate to a depth of 8 inches before it went to smash. The velocity was about 1,800 foot-seconds.

A final test was lately made, and a new projectile, manufactured by Isaac G. Johnson and Co., of Spuyten Duyvil, was issued. It was a 6-inch cap projectile, weighing 100 lbs., and smokeless powder was used. The initial velocity was 2,540 foot-seconds, and the striking velocity 2,500 foot-seconds. The projectile went clean through the 10-inch re-rolled plate, through 12 inches of oak, three sheets of steel seven-sixteenths of an inch thick, and 8 feet into the dirt. It was dug out of the dirt almost as good as new, except for the cap. In the plate itself there were two little cracks, besides the hole that the projectile tore through. The cracks were very small and insignificant, showing the plate to be an excellent one. The projectile, unlike the ordinary projectile used now, was of solid steel, with a soft steel cap. The ordinary projectile is hollow, because, heretofore, there has been no known process of making it solid and hardening the steel. Johnson and Co. have such a process. The idea of the soft steel cap on the end of the projectile is to protect the point and steady it until it enters the target. The cap weighs about 5 lbs. and when it strikes the plate it separates before the projectile, holding the point of the projectile itself as steady as a rock. At first glance it would

seem as if the cap would make the range shorter. In the few tests there have been it was found that the range of the capped projectile was greater instead of less.

A successful test was lately made at Indian Head of a return spring gun-carriage devised by the Naval Ordnance Bureau. This carriage is intended to do away altogether with the use of hydraulics in any form in connection with the mounts of heavy guns. The hydraulic recoil cylinders which have heretofore been an essential feature of naval gun mounts are replaced by powerful springs for arresting the recoil and running the gun out again, while the loading and training of the gun are done by electrical power. The test was made with a 12-inch gun, and it was proved that a gun of this size can be handled by one man. Five shots were fired, demonstrating the entire success of the mount, and it may be adopted for future mounts for guns of all calibres, but will not be substituted for the hydraulic mounts now in use in the Navy. The new mount will be less expensive than the old style, and somewhat lighter.—*Army and Navy Journal.*

MILITARY NOTES.

PRINCIPAL PROMOTIONS AND APPOINTMENTS DURING OCTOBER.

Colonels F. W. Collis, C.B., Indian Staff Corps, and J. M. Sym, C.B., Indian Staff Corps, to be Major-Generals. Colonel G. Salis-Schwabe, *p.s.c.*, h.p., to command the troops in the Mauritius, with the temporary rank of Major-General; Colonel J. H. Barnard, C.B., C.M.G., A.D.C., h.p., to command a second-class district in India, with the rank of Brigadier-General.

HOME.—During the recent Aldershot manœuvres trial was made, in the 56th Field Battery, R.A., of the old practice of mounting the gunners from the axle-tree seats on the off horses of the gun team. The custom prevailed in the Bengal Artillery from the time experimental horse artillery was formed in 1801, until the amalgamation of that service with the Royal Artillery after the Indian Mutiny. Each horse of the team was ridden, and the guns were worked by the men who rode the off horses. Its chief advantages were said to be economy, greater exertion to be obtained out of the horses in a difficulty, and a smaller number of men and horses exposed to the enemy's fire. Its disadvantages, on the other hand, were the overweighting of the horses and the liability, from the paucity of numbers, of a gun being crippled in action by a few casualties. Some curious coloured illustrations of the Bengal Army about the year 1830 are to be found in the library of the R.U.S. Institution. Gunners are there shown on the axle-tree seats, but not on the limber boxes. A gunner is riding on each of the three off horses, including the wheeler, and each is provided with reins; while the gunner on the off-centre horse carries a rammer. It has been said that the off horses were ridden, not so much on account of the greater mobility believed to be acquired thereby, but because of the horses being entires. It is strange, however, that in the presidencies of Madras and Bombay, where the horses were also entires, no such system is believed to have prevailed.

The experiment was tried in the British Service in 1889 by T Battery, 2nd Brigade, Field Artillery, at Exeter, but with what result is not known. In the recent Aldershot manœuvres its trial in the 56th Field Battery attracted some attention. Opinions naturally differ as to the merits of the system. It undoubtedly secures greater rapidity when moving over rough ground, but its advantages were not apparent in the control over the off horses when reversing, starting, etc. It would probably improve the class of horse, and the difficulties with the off-centre

horse—the proverbial lame duck, for which any animal was considered good enough—would disappear. It would be advantageous in that it would necessitate all gunners being taught to ride, as in the French and other armies; and in this manner commanding officers would be assisted in their selection of non-commissioned officers. In present circumstances, if the selection falls upon a gunner, he has to be taught to ride at the time, perhaps, when his services are much required in the battery. In the 56th Field Battery the system was introduced prior to proceeding to Okehampton in the summer, but not much opportunity was afforded for teaching the gunners to ride. Still they were riding in the teams within a week, and appeared to be able to stick on, and to be able to dismount, get into action, and afterwards remount as quickly as they could from the axle-tree seats. The gunners wore puttees and no spurs, and had reins though they did not do much driving. Coming into action with five men mounted in front of the gun seemed a tempting target, but at a distance of 2,000 yards or so it was difficult to distinguish any difference between the 56th and other field batteries.

Some interesting experiments have been carried out recently in India with the new Lee-Metford bullet invented there, the result of which is given in the *Pioneer Mail*. This experimental ·303 bullet is exactly similar to the present service bullet in shape and weight: a material advantage, as no alteration in the sighting of the rifle is necessary. The difference between the two consists in the lead-core of the new bullet being inserted from the point, whereas in the service pattern it is inserted from the base. Thus in the former the thin part of the cupro-nickel envelope is to the front and the lead-core is exposed at the point, so allowing the bullet to "set up" on meeting sufficient resistance. A happy mean has to be struck in devising a bullet for a small-bore rifle, as with a smokeless explosive like cordite it has to stand a pressure on the base of from 15 to 18 tons, and yet it must "set up" on impact in order to have any stopping or killing power. The various ·303 sporting bullets shoot well up to 250 yards or so, but cannot be depended upon for accuracy at longer ranges. Six different kinds of these bullets were tested at Dum-Dum, and all gave poor results at 500 yards range, the firing being from a fixed rest and cordite being the propellant. That the new Dum-Dum bullet can carry accurately has been evidenced by the fact that the mean average deviation of five targets (twenty shots on each target from fixed rests at a range of 500 yards) was 5·04 inches; the best target giving a figure of merit of 3·84 inches. At a match recently fired at Changla Gali, the best five scores made at 200, 500, and 600 yards, seven shots at each range, were made with this Dum-Dum bullet, the scores ranging from 92 to 100. This would be hard to beat with any ammunition.

In experiments recently carried out at Dum-Dum the new bullet was found to "set up" on being fired (at a range of 50 and 300 yards) into gunny-bags filled with earth, after penetrating to 12 inches. The bullet proposed by the Home authorities is reported to have penetrated 28 inches of deal before "setting up." This high power of penetration would not be of much effect in stopping a fanatic charging. Moreover, this pattern of bullet gave indifferent shooting at 500 yards and bad at longer ranges. The objection of the Woolwich experts to the proposed Indian bullet was that it would be liable to strip in the bore; but a large number of rounds have now been fired without any such mishap occurring, and with good metal for the envelope and careful manufacture there is no reason why stripping should take place any more with the new bullet than with the service one. It is claimed for the new bullet that its destructive powers are far superior to those of the present Lee-Metford pellet, and that it combines with this even greater accuracy in shooting. The military authorities must pronounce a decision on the point very soon, for the lessons learned in the Chitral campaign cannot be ignored. At the Meerut rifle meeting in December experiments will be carried out, which will remove all doubt as to the superiority or otherwise of the new bullet. If the

results are disappointing the Government of India will have to consider whether the small-bore rifle should be discarded and a bigger bore be resorted to again. This would be a retrograde step, no doubt; but remembering that British troops in any war across the frontier may have to encounter fanatical enemies who must be stopped at all cost in their desperate charges, the necessity for a bullet which will drop a man in his tracks is clearly established. The *Pioneer Mail* places full trust in the new Dum-Dum bullet; specimens which have been seen after firing have "set up" quite sufficiently, and the experiments all show that accuracy has not been sacrificed. Certainly the wounds on carcases of animals are severe enough to indicate that the bullet will do its work effectually on the human frame. It will not mutilate like the old Snider bullet, practically an express, but the shock on impact will be equal to that given by the Martini bullet.

In view of the accuracy of the long range small-bore rifles, some interesting experiments were conducted not long ago by the Society of Civil Engineers in Paris, in order to determine the visibility of different coloured uniforms. To designate the visibility of colours at great distances a series of numbers were taken, each signifying disability. It was regarded as a matter of importance to determine how these numbers compared in clear weather, in cloudy weather, and at night. The result of the observations at 650 yards resulted in white being most distinctly seen, light hussar blue came second, scarlet third, green fourth, dark blue next, while gray and the colour of dry foliage were almost invisible. In cloudy weather at the same distance no change occured in the case of white, dark blue, gray and light green, and brown, but light hussar blue and the British scarlet became less visible, while green was more distinctly seen. At night the results were the same as in cloudy weather, except that white became invisible. The scarlet of the British infantry was considered to be very visible generally, but the gray worn on service in tropical countries was very difficult to see; the iron gray and dark blue of the German and Italian infantry was very nearly as invisible. In regard to the French, the red képi, dark blue coat, and the scarlet trousers were not conducive to invisibility. But, as a matter of fact, only that part of the red trousers between the lower edge of the tunic and the top of the boottee would be visible, and in dusty weather even this would be difficult to discern. The light reflected from cuirasses, helmets, and sabres was not taken into account.

The three infantry brigades at Aldershot were practised in field firing at Bisley between September 22nd and October 14th. The general and special ideas were almost identical in each case, but the distribution of the dummies varied considerably to suit the strength of the different attacking brigades.

The general idea was that a Southern Force, advancing on Windsor, having gained possession of the Hog's Back, learns from its cavalry that the enemy is retreating towards Bagshot with rear-guard in position north of the canal near Cowshot Manor, and that the Cowshot Manor and Pirbright bridges are still intact.

The special ideas were as follows:—*Northern Force*—One company is retreating north from Cowshot Manor bridge along the western edge of the National Rifle Association enclosure; half a battalion is extended on Cowmoor; half a battalion is extended south of Hoglees; one battery of Royal Artillery is in position on the hill south-west of Stickledown. *Southern Force*—The G.O.C. the advanced guard, consisting of four battalions of infantry, a battery of field artillery, and half a squadron of cavalry, received the following order at 8.30 a.m.:—"From Chief of the Staff, Puttenham, to G.O.C. advanced guard, Normandy—Cavalry report enemy retreating towards Bagshot with rear guard in position north of the canal near Cowshot Manor, and that Pirbright and Cowshot Manor bridges are still intact. Push forward and drive in enemy's rear guard, so as to secure the passage of the canal." At 10 a.m., at which hour operations commenced, the half-squadron of cavalry is reconnoitring; the

remainder of the force is south of the London and South-Western Railway, near Cowshot Manor bridge, awaiting information.

The Brigades under instruction represented the Southern Force in each case, and were accompanied by a small force of cavalry and artillery.

The 1st Brigade fired on October 14th and was composed of five battalions. The dummies represented :—

One Battery of Artillery at quarter interval, which received 18 infantry hits on 36 dummies.

Advanced position, Hoglees, held by half-battalion represented by 86 dummies; attacked by one battalion in first and one in second line received 202 hits.

Advanced position, Cowmoor, held by four companies (and one retreating company), represented by 300 dummies; attacked by a similar force (two battalions) received 382 hits.

In these actions the firing line received 431 hits on 295 dummies, the supports 153 hits on 91 dummies.

Main position held by one battalion represented by 270 dummies, attacked by two battalions in first and two in second line, received 356 hits: 74 on the firing line and 282 on the supports.

Brigade percentage of hits to rounds fired, 14.

In the main attack the supports suffered much more severely than the firing line, and in all cases the lines in rear unrepresented by dummies would have felt the fire severely.

The umpire's remarks may be summarised as follows :—

Signals insufficiently used.

Supernumerary rank standing when men are kneeling (a common fault).

Advances too long.

Reserve too late in reinforcing.

Attack on main position well and steadily carried out.

Fire discipline good.

Artillery conformed to infantry attack.

Fire on surprise targets quickly opened and with good results.

The 2nd Brigade was exercised on October 6th, and, being composed of only two battalions, was opposed by fewer dummies, representing :—

Artillery. One battery, 36 dummies, 18 hits.

Advanced position. Cowmoor, four companies. 230 dummies attacked by one battalion in first line and one in second received 159 hits :—

98 on 195 dummies in first line.

61 on 35 ,, ,, support.

Main position. Half-battalion. 150 dummies attacked as above received 162 hits :—

108 on 100 dummies in firing line.

54 on 50 ,, ,, reserve.

Percentage of hits to rounds, 12.

Umpire's remarks on the firing :—

Ranges were taken by the mekometer slowly, and in some cases very inaccurately.

In the attack on the advanced position—

Firing line slow in opening on surprise targets.

Bayonets not fixed at 350 yards.

No fire directed on guns.

Supports reinforce a flank and not in gaps.

Successive positions when taken were occupied in quick time and not by a rush.

Attack stiff, lifeless, and in the nature of a parade movement—not an attack.

Fire discipline moderate.

In the main attack—

Supports and reserves too late in reinforcing; second line too far behind.

No independent fire at close ranges.

Fire discipline good.

"The casualties ordered by the G.O.C. the brigade appears to have paralysed the action of both battalions, which evidently had not been accustomed to such heavy and early casualties among the senior officers. The Major-General Commanding does not, however, consider field firing as the best opportunity for practising this practice."

This latter is a somewhat important point, and it looks as if the Aldershot troops had not been trained in a good system of casualties in their field days; the placing out of action by umpires of whole sections and companies can never properly represent the dropping loss of single leaders and men.

The 3rd Brigade (four battalions strong) fired on September 22nd, in a heavy rain and strong wind.

Artillery targets, 18 dummies, 5 hits.

Advanced position, Hoglees, half-battalion attacked by one battalion in first and one in second line:—

120 dummies received 302 hits.

Advanced position, Cowmoor, half-battalion attacked by a similar force:—

164 dummies received 117 hits.

Of these hits the firing line received 243 hits in 160 dummies.

" " supports and reserve received 176 hits in 80 dummies.

Main position. One battalion attacked by second line (2 battalions) passing through first line. 340 dummies received 469 hits:—

267 hits in 150 dummies in firing line.

202 " 190 " " support and reserve.

A veritable *feu d'enfer*, easily accounted for by the fact that independent firing, presumably at short ranges, was continued for nearly six minutes.

Percentage of hits to rounds, 10.

Umpire's report:—

In the right attack there were 30 per cent. of casualties ordered among the men, without a due proportion of leaders.

Supporting bodies moved up diagonally under fire to a flank.

Too much centralisation of command.

Fire discipline good.

The above figures seem eminently satisfactory; almost every dummy was pierced by more than one bullet, and the total effect would appear to have been annihilating.

It might, however, be remarked that in effecting this result seven rounds of every eight would appear to have been wasted, for 12 per cent. was the total percentage of hits to rounds fired. Had the occupiers of the advanced positions been composed of flesh, blood and nerves, instead of condemned stores, they would probably have cleared out before the loss was so severe, and so ammunition would have been saved and the percentage would have been higher, but the loss of the attacking force could hardly have been less than that of the defenders. But in operations of this nature, over unknown country, with ranges only guessed, experience shows that if one bullet, out of every seven to ten fired, hits, there is little to complain of. In action the disproportion is much greater. The dummies are only heads and shoulders, 2 feet high, with gaps between them, and are a very small mark. High percentages at field firing, as a rule, indicate that either the objects fired at are mere bullet traps, *i.e.*, too big and too prominent, or the objects are exposed for an undue length of time in the case of disappearing targets; or in the case of stationary dummies are fired at for too long a time, especially at short ranges.

These brigade field firings are considered to be in some degree the crowning

work of the Aldershot year. The troops engaged have completed their training in musketry, in drill and in manœuvre.

Although the fire discipline was reported as good, the results can hardly be considered so; the umpire in one case "considered the operation disappointing," and in another that "the exercise was not an instructive one."

The percentage of hits, 12 per cent., would be much reduced in the stress of real fighting.

The disproportionate effect on the supports and reserves in some cases would seem to show that our troops are even now not taught to aim low enough, and the difficulties with regard to casualties indicate that even at Aldershot the attack, as practised in our field days, is not yet fully realistic.

BELGIUM.—The Belgian Ministerial Council has, in a series of sittings, under the presidency of the King, decided upon the details of a measure of army reform, which is to be proposed during the early days of the new Parliamentary session. This bill provides, with the abolition of representative and the introduction of personal service, for an increase of the army to 216,000 men, including the reserves. The Civic Guards will also be transformed into a regular Landsturm, which in case of need could put 200,000 men in the field. When it is remembered that the present war strength of Belgium is only 130,000 men, the importance of this proposal by General Brassine, the War Minister, will be understood. It has yet, however, to be made acceptable to Parliament, and that will not be an easy matter.—*Militär-Zeitung.*

The Bridging Company of Belgian Engineers was employed during the late manœuvres. Its peace strength is 6 officers and 137 men; but on a war footing it consists of 6 officers, 350 men, 206 conductors, and 328 horses, without counting the reserve. On the night of the 27th August it constructed in absolute silence, although without light and in a dense fog, a bridge 119 millimetres 50 centimetres in length across the Meuse in 1 hour 40 minutes. Again on the 31st August, in the daytime, it constructed a bridge 136 metres long in 1 hour 15 minutes, the materials being placed about 150 metres from the bank. These results were considered very satisfactory.—*Revue du Cercle Militaire.*

FRANCE.—General J. L. Trochu, C.B., who will be best remembered as Governor of Paris during the siege in 1870-71, died on the 6th October, in his small hôtel, Rue Traversière, Tours.

Jules Louis Trochu was born at Palais, near Belle Île en Mer, on the 12th March, 1815. After serving as a student at St. Cyr, and at the "École d'application d'État-Major," he was promoted to lieutenant in 1840, captain in 1843, and attached to the staff of Marshal Bugeaud, then governor of Algeria. He was chef d'escadron in 1846, lieut.-colonel in 1853, and served in the Crimean campaign, where he was an officer of great weight in the councils of the French Army. Nominally he was simply first aide-de-camp to Marshal St. Arnaud, but it was known that he went out fully charged with the notions and the wishes of Napoleon III. He was a cautious, thinking man, well versed in strategic science, and had great influence. When St. Arnaud was relieved by Canrobert, it was Trochu who told the former that the state of his health demanded his retirement. Trochu had a high opinion of the British infantry. He was promoted General of Brigade on the 24th September, 1854, after the battle of Alma, and held a command as such till the fall of Sevastopol. For his services in the campaign he received from the English Government the Crimean medal with four clasps, and was nominated a C.B. on the 22nd February, 1856. He was promoted to be General of Division in 1859, and served throughout the Italian campaign with distinction.

In 1866 he was charged with the preparation of a report on the re-organi-

sation of the French Army, and published anonymously in the following year "L'Armée française en 1867." Passed over on account of the doctrines enunciated in his book, he was without a command at the outbreak of the war of 1870, but after the fall of the Olivier Ministry he was charged by the Count of Palikao with the organisation of the 12th Corps at Chalons, and on 17th August was nominated Governor of Paris by Napoleon III.

After the revolution of 4th September, he accepted the position of President of the Government of National Defence, on condition that he should retain his appointment as Governor of Paris. Besides taking an active part in the Government, he directed the defence of Paris against the Prussians till the capitulation on 26th January, 1871, repressing the riots of 31st October and 22nd January, and fighting a series of battles with the enemy, of which the best known are Bourget, 28th October; Champigny, 30th November to 3rd December; and Buzenval, 19th January.

He was made grand officer of the Legion of Honour in 1861, and retired from the Army in 1873.

His last literary work was "L'Armée française en 1879."

GERMANY.—In consequence of the law which was enacted on the 28th June, 1896, with regard to the formation of the fourth battalions into regiments, four new infantry regiments will be formed in Bavaria. This will take place on 1st April, 1897. The regiments will be numbered 20 and 21, with three battalions each; and 22 and 23, with two battalions each.—*Militär-Zeitung.*

The following Cabinet Order was sent from Görlitz on the 12th September by the German Emperor to Count Waldersee:—"Having entrusted to you the supreme command of the united 5th and 6th Army Corps in the grand manœuvres of this year, I was sure that you would fulfil thoroughly well the duty assigned to you. As Commander of the Eastern Army, you have shown what so variously composed a force can accomplish under an able hand. Equally skilful in following the principles of modern warfare and the old Prussian tradition of vigorous offensive, you knew how, by your orders and directions, before and during the fight, to communicate this spirit and to keep it alive in all your subordinate commanders. I, therefore, gladly express to you my warm acknowledgments and my Royal thanks. In further proof whereof, I appoint you Chief of the 9th Regiment of Schleswig Field Artillery, with the retention of your previous appointments. The regiment has been directed to furnish you with the report and list of officers. I would request you, at the same time, to inform the officers of your staff as to the accompanying token of my favour."—*Militär-Zeitung.*

In the revised musketry regulations certain precautions are taken for the better protection of the public. The soldiers who are detailed to keep the ranges clear, must themselves keep outside the area of danger. They must also observe persons coming near the range, and it is their duty to see that such as do not understand the signals are prevented from going into danger. For instance, persons who do not know German, children, and persons of weak intellect are to be watched.

In the instruction, the tactical object is to be kept in view from the beginning. The fire of infantry against infantry must always be considered as of the first importance, and there must be much practice at short and medium distances. When it is at all practicable, shooting at long ranges should be ordered, and in this connection the circumstances of fortress warfare should be taken into account. —*Deutsche Heeres-Zeitung.*

The Prussian remount arrangements have been for many years receiving careful attention. Successful efforts have been made to improve the breed of military horses in those provinces which are best suited for the purpose by their soil and climate. Such provinces are, for instance, East Prussia, West Prussia, Posen, and Hanover. None but the strongest thoroughbred stallions are

employed, prizes are given, and other assistance is afforded by the State. The object is to produce a uniform class of horse for the cavalry, it having been found that the crossing of various breeds, without sufficient knowledge and care, had given horses which were quite unlike in their speed and powers of endurance. It is reckoned that Prussian troop horses are better bred than those of any other army in Europe, and that Prussia is now in a position to supply not only its own remounts but also those of Bavaria and Saxony.—*Militär-Zeitung.*

ITALY.—The Italian Government is pushing on its fortifications in accordance with the plan of defence in Erythrea, decided on by General Baldissera. It is stated that the disastrous battle of Adowa would not have been fought, if the neighbouring fort of Fremona had been completed, armed, and manned, for in that case General Baratieri would not have felt it necessary to risk a desperate stroke.—*Revue du Cercle Militaire.*

RUSSIA.—In case of war with Russia, says the *Novosti*, the provisioning of the Austrian and German Armies would have to be carried out on a plan involving the following dispositions on the Eastern frontiers :—

1. The formation of a mobile reserve of provisions to insure the uninterrupted feeding of the troops, and the collection of the necessary train for transport.
2. The creation of reserve magazines for provisioning the troops at the points of mobilisation, within the zone of concentration, and during the first operations.
3. The construction of technical establishments for the preparation of victuals in sufficient quantity for the needs of the armies.
4. That the troops should have it in their power to avail themselves of the local resources of the theatre of war.
5. The organisation and distribution of these resources by the intendance.
6. The organisation of the transport of provisions coming from the interior.

Military history proves that for operations in central and southern Europe, Spain excepted, a mobile reserve of eight or ten days' victuals is enough. In Russia this amount should be trebled. The Austrians have taken the latter fact as their guide, and have made their mobile reserve sufficient for twenty-six days. The Germans have made theirs to last for fifteen days.

Existing railways in Germany and Austria would make transport easy to the frontiers, but beyond them, new lines would have to be laid and depôts established. The Russian Army should consider these matters and prepare to beat back famine in the wars of the future.—*Revue du Cercle Militaire.*

Henceforth, soldiers serving in the military districts of Omsk, Irkoutsk, and Amoor, or in the Siberian Fleet, and natives of European Russia, will have the right to demand, on being discharged, or going to the Reserve, that instead of returning to their native countries, they and their families should be settled in Siberia, on lands granted by the State. The conditions are very liberal. This arrangement will, coming at the same time as the new railway, help to develop the population and wealth of Siberia.—*Revue du Cercle Militaire.*

It is reckoned that when the railway is finished to Vladivostok, the 9,292 versts thence to St. Petersburg can be traversed in thirteen days. The probability is that in the beginning of the twentieth century the Siberian Railway will have been completed throughout its entire length. The branch line, from Perm to Koltass has already been opened and is in full working order. It connects the port of Archangel with the main Siberian Railway, and is intended to develop the natural resources of Siberia, and to form a connecting link between the Government of the latter and that of Archangel.—*Revue du Cercle Militaire.*

The frontier battalions of Turkestan have been formed into brigades. The Cossack regiments have also been organised as a Turkestan Brigade. These measures have been taken in order to place the troops directly under the military commander in Turkestan, instead of under the various local military Governors.—*Revue du Cercle Militaire.*

Operations, lasting two days, to test the effect of artillery and infantry fire, were held at Krassnoe-Selo, in the presence of the Emperor of Russia, in August last. Artillery and infantry manœuvred against each other, and fired at fixed and moving targets, the tactical positions taken up and the mobility of the troops being taken account of in the contest. It is intended in future to attach importance to the tactical part of these exercises, so as to make them resemble war rather than a mere shooting competition.—*Militär-Wochenblatt.*

Exercises similar to the above were carried out in the Caucasus during the present year, under Lieut.-General Rüdiger, Inspector-General of Musketry, and they will in future be held every year throughout the Russian Army.—*Militär-Wochenblatt.*

A second independent cavalry brigade is to be formed of the 51st and 52nd Dragoon Regiments of the Russian Army. The reserves are at the same time to be increased. Until now there have been only fifteen cavalry divisions and one independent cavalry brigade.—*Militär-Wochenblatt.*

According to the law hitherto in force, dating from 1886, volunteers could join the army at any time from the 15th August to the 31st December. This period has now been reduced to one month and a half, namely, from the 15th August to the 1st October. All volunteers will thus commence their duties about the same time, and make some progress before winter. It will also suit the large number of volunteers of the first educational category, who intend to pass into higher grades of the Reserve, and will admit of quicker promotion in the case of those who are able to pass the examination for the rank of ensign.—*Militär-Zeitung.*

NAVAL AND MILITARY CALENDAR.

October, 1896.

2nd (F). 4th Hussars and 3rd Field Battery, R.A., arrived at Bombay from England.

3rd (Sat). 1st Battalion Northumberland Fusiliers, and four companies 2nd Battalion Dorsetshire Regt., left England for Gibraltar.

4th (S). Commencement of Army Manœuvres in Servia.

5th (M). Commencement of exercises of French Army Medical Corps.

6th (Tu). Launch of first-class battle-ship "Gaulois" at Brest.

8th (Th). 1st Battalion Northumberland Fusiliers and four companies 2nd Battalion Dorsetshire Regiment arrived at Gibraltar.

" " Indian transport "Dilwara" left England for Aden with military drafts.

" " Matabele rebels attacked near Ironmine Hill by the force under Major Thorold.

" " Launch of second-class cruiser "Catinat" at Havre for the French Navy.

9th (F). Madokessia's stronghold near Selundi, Matabeleland, destroyed.

" " 1st Battalion North Staffordshire Regiment arrived at Cairo from the front.

" " 21st Hussars left Bombay for Egypt, and 2nd Field Battery, R.A., left same day for England, on board transport "Britannia."

" " Conclusion of exercises of French Army Medical Corps.

" " Launch of torpedo-aviso "Dona Maria de Molina" at Ferrol for the Spanish Navy.

10th (Sat). Mashingombu's, Matabeleland, attacked and captured by the force under Colonel Alderson and Captain Jenner.

12th (M). Launch of torpedo-boat-destroyer "Corriéntes" for the Argentine Government, from the yard of Messrs. Yarrow at Poplar.

13th (Tu). Major-General Sir H. Kitchener, Sirdar of the Egyptian Army, arrived at Cairo from the front.

15th (Th). Chena's kraal, Matabeleland, captured by Imperial force after six hours' fighting. British loss, 7 killed and wounded.

16th (F). 30th Field Battery, R.A., and 1st Battalion Royal Scots Fusiliers, arrived at Bombay.

,, ,, Wedza's stronghold, Matabeleland, captured by Imperial force under Lieutenant-Colonel A. S. S. Baden-Powell, 13th Hussars.

17th (Sat). 21st Hussars arrived at Cairo from India.

,, ,, Attack on the Sarani station, Quetta Railway, by the Jangani section of the Marri tribe; Bombay Native Infantry fired upon.

,, ,, Launch of the first-class armoured cruiser "Princessa de Asturias," at Cadiz, for the Spanish Navy.

18th (S). 2nd Dragoon Guards (Queen's Bays) left Egypt in the transport "Britannia" for England.

19th (M). Gatzi's kraal, near Marandella's, Matabeleland, surprised by Imperial force; Major R. S. Evans, Sherwood Foresters, killed.

20th (Tu). Launch of first-class cruiser "Diadem" at Govan, from yard of the Fairfield Shipbuilding Company.

22nd (Th). 57th and 80th Field Batteries, R.A., left England for India in the transport "Dunera."

23rd (F). 1st Battalion Royal Welch Fusiliers left Bombay for Aden in the transport "Victoria."

,, ,, Colonel Plumer's force, Matabeleland, disbanded.

29th (Th). Indian transport "Dilwara," arrived at Bombay with military drafts.

,, ,, 5th and 17th Companies, Eastern Division, R.A., embarked at Gibraltar on S.S. "Nubia" for Malta.

30th (F). Dango's kraal, Singola, Matabeleland, destroyed by an Imperial patrol.

FOREIGN PERIODICALS.

NAVAL.

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AUSTRIA-HUNGARY.—*Mittheilungen aus dem Gebiete des Seewesens.* No. 11. Pola and Vienna: November, 1896.—"The Engines of English War-Ships." "The Progress in Armour and Naval Guns in the year 1895." "Yarrow's Automatic Feed-Arrangements for Water-tube Boilers." "Reed's Water-tube Boilers and the Complex Engines of English Torpedo-boat Destroyers." "Uniform or Alternating Currents for use on board War and Merchant Ships."

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Simple Lectures for Company Field Training. By Major A. W. A. POLLOCK, Somersetshire Light Infantry. London: W. Clowes and Sons, 1896. Price 2s.

Notes on Artillery and Artillery Drill, 1896. Price 1s.
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Hints on Working out Tactical Problems, 1896. Price 2d.

By Lieut.-Colonel BRUNKER, *p.s.c.*, late A.A.G. Lahore. Portsmouth: Holbrook and Sons.

Simple Notes on Outpost, Reconnaissance, and Fire Discipline (for Militia Officers and N.C.O.'s). By Captain R. A. D. ROWLEY, *p.s.c.*, Adjutant 3rd Battalion Royal Irish Regiment. London: W. Clowes and Sons, 1896.

Handbook of Company and Battalion Drill, etc. 38th edition. By Captain C. SLACK, late 3rd Middlesex A.V. London: W. Clowes and Sons, 1896. Price 2s. 6d.

John Sherman's Recollections of Forty Years in the House, Senate, and Cabinet. Two vols. Sampson Low and Co.

Mr. John Sherman, in his autobiographical recollections, which are curiously dull, considering the important period they cover, quotes an extract from Hume's "History of England," and in so doing renews a legend, the truth or falseness of which no human being can now prove, unless evidence hitherto unknown to this generation becomes available.

Difficulties in this attempt to verify contemporary history are perennial, and lapse of time intensifies uncertainty, in proportion to the gap of either time or of space intervening between the searcher and his object.

Mr. Hume states that Oliver Cromwell embarked for passage to New England, and was debarred the voyage by direct orders from King Charles I., who "had afterwards full leisure to repent the exercise of his authority."

Some of Mr. Hume's references for the accuracy of his statement conflict with the date given by others, and Mr. Sherman's account antedates the whole; he quotes the year 1634; Mr Hume relates the occurrence as belonging to 1637, and mentions, among other references, Hutchinson's "History of Massachusetts Bay," which gives 1635 as the year "many persons of figure and distinction are said to have been prevented by express order of the King, as Mr. Pym, Mr. Hampden, Sir Arthur Hazelrigg, Oliver Cromwell, etc."

Hutchinson writes with evident hesitation:—"I know this is questioned by some authors, but it appears plainly by a letter from Lord Say and Seale to Mr. Vane, and a letter from Mr. Cotton to the same nobleman, as I take it, though his name is not mentioned, and an answer to certain demands made by him, that his

lordship himself, and Lord Brooke and others, were not without thoughts of removing to New England, and that several other persons of quality were in treaty about their removal also, but undetermined whether to join Massachusetts or to settle a new colony."

Lord Say and Seale's letter is not given in the appendix to Hutchinson's volume, but his lordship's "demands" are fully reproduced, and after each is printed the answer of the Massachusetts authorities. Demand 9 runs:—"That for the present the Right Honourable the Lord Viscount Say and Seale, and the Lord Brooke, who have already been at great disbursements for the public works in New England, and such other gentlemen of approved sincerity and worth, as they, before their personal remove, shall take into their number, should be admitted for them and their heirs, gentlemen of the country. But for the future none shall be admitted into their rank, but by the consent of both Houses."

Here there is no specific statement that Cromwell was one of the intending emigrants, still less that he had already failed in making good his transit to the New World.

The answer from the Settlement was, in effect, an agreement to the proposal, subject to certain limitations.

Rushworth is another of Hume's authorities, and he gives April, 1637, as the date of the embargo being laid on the eight ships in the Thames, about to sail for New England; and May, 1638, as the date of the Order in Council releasing them and their passengers, but the same order prohibits further unlicensed emigration.

Carlyle, in his Cromwell letters, makes no mention of contemplated emigration, and implies that such was not a probable idea during the years mentioned by Rushworth, for during those years the Huntingdon property was sold, his farm in the Fen district was worked, and Cromwell was acquiring the title of "Lord of the Fens," by actions other than unsuccessful farming, or futile attempts at emigration.

Clarendon enters into no details on the subject, but relates a conversation on emigration between Falkland and Cromwell in 1641; this is misquoted by the modern dictionary of national biography, which scouts the story as mythical. The older biographical dictionaries, in various languages, repeat the legend, the one copying the other, and giving no references; hence the deduction seems justified, that the anecdote rests on the foundation of Doctor George Bates, who published the "Elenchi motuum" in 1663, when he was physician to Charles II.; his was the earliest direct mention of Cromwell's name in this connection, and Doctor Bates' court position makes his evidence suspect.

Dugdale reproduced the same story in a more ornate form in 1681, and thenceforward elaboration grew like a snowball in the hands of Cotton-Mather, Rushworth, Hutchinson, and other writers, till the vamped-up story was nailed to the counter in disgrace by John Forster in 1840, and clinched in the new biographical dictionary of our time, as a legend, started by a bitter political enemy, probably unfounded, and assuredly unproven.

Die neuere Kriegsgeschichte der Cavallerie von Jahre 1859 bis heute. Zusammengestellt von Oberst Freiherr von ROTENHAN. Munich: J. Roth. Vol. I., pp. 410; Vol. II., pp. 502. Price 10s.

The number of books, pamphlets, etc., consulted by Colonel von Rotenhan in the compilation of these volumes amounts to over 450, and it is, therefore, not surprising that the outcome of this prodigious amount of research should form a handbook of all actions in which cavalry have taken any part during the last thirty years. From China to Peru nearly every country in the world has mustered at some time or another during this period its thousands, or its few score only may

be, of mounted combatants, and all find a brief recognition of their exploits in these volumes. The work is not only a valuable and succinct chronological history of cavalry doings in some thirty campaigns, but, from the long tabular list of authorities appended to it, it forms also an excellent starting point for the student who may wish to go deeper into the subject, but who without its guidance perhaps might be at a loss where to turn for the best sources of information. Each campaign opens with a short description of the organisation of the cavalry forces on both sides, the numbers taking the field, and a diary of movements and operations, the whole being followed by a brief review of cavalry actions, and the general *rôle* played by the cavalry in the campaign. One of the most interesting chapters is the one devoted to the long sanguinary conflict between Paraguay and the Triple Alliance. On both sides mounted troops played a most important part, and the want of regular training as cavalry was largely compensated for by the skill of the men as rough riders, and by their dexterity in the use of the lasso. The charges were seldom delivered in close order, but the shock was carried out with so much impetuosity that it usually bore down all opposition. A free use of fire-arms, and of the lasso, however, almost invariably formed the accompaniments of cavalry actions. On some occasions very large masses of cavalry were employed, *e.g.*, at the battle of Tuyutu, 24th May, 1866, when Lopez's force of 8,000 cavalry rode through to the rear of the allies where, however, they suffered enormous loss, and only a small fraction succeeded in cutting their way back again. Apart from casualties, which were very heavy, the sickness and mortality among the horses, owing to want of grain and to their feeding on coarse, sour grass, was so excessive that the allies early in the campaign had to declare all horses as national property; whilst the Paraguyan remounts, so long as they could be obtained at all, were almost entirely made up of wild horses from the interior. Towards the end of the war the horses in Lopez's army failed altogether; but even then the dismounted men formed the real fighting portion of his diminishing army, and it was largely due to their courage and devotion that he was enabled to continue the struggle for so long.

The details in regard to the number of cavalry engaged in the great continental wars of 1859, 1866, 1870-1, and 1877-8 are very full, and are in many instances accompanied with the *ordre de bataille*. To attempt to analyse the figures would, however, far exceed the limit of space at our disposal. Perhaps the most striking feature to note is the comparatively small cavalry death-roll; the bulk of which is mostly accounted for by some special disaster, *e.g.*, as at Königgrätz, where only ten men escaped unwounded in an Austrian Cuirassier regiment. During this campaign, the German cavalry numbered, according to Besser, 21,750 horses; the Austrian cavalry, according to Winterfeld, 26,980 horses, the Saxon cavalry 3,200; and the Italian cavalry close on 15,000. Colonel von Rotenhan, however, gives the figures of the German cavalry as 29,100; 210 squadrons having entered Bohemia, and 29 squadrons operating with the Army of the Maine. The cavalry of the Austrian Army of the North he sets down as 169 squadrons or 28,000 men, and the Saxon cavalry as 16 squadrons or 3,200 men. At Königgrätz, the Prussians had 142 squadrons, as against 165 Austrian, and 16 Saxon squadrons. The Prussian cavalry loss in the battle is given as 48 officers and 496 men killed and wounded, and 74 missing; the Austrian cavalry suffered a loss of 79 officers and 564 killed and wounded, and 18 officers and 1,332 men missing. During the whole of the campaign the Prussian loss amounted to 850 officers and 21,776 men, whilst the cavalry loss was 14 officers and 144 men killed; 103 officers and 958 men wounded and 3 officers and 179 missing, or $6\frac{2}{5}$ per cent. The details in regard to the cavalry operations between the Prussian and Bavarian corps on the Maine are very complete.

The following table is a digest of the more ample details given by Colonel von Rotenhan of the German cavalry losses in the campaign of 1870-1:—

—	Total Loss.		Cavalry.	Dead.			Wounded.			Missing.			Total.		
	Offers.	Men.	Field State.	Ofrs.	Men.	Horses.	Offers.	Men.	Horses.	Ofrs.	Men.	Horses.	Offers.	Men.	Hor's.
Wissembourg, 4th Aug.	91	1460	—	1	2	12	1	11	19	—	2	1	2	15	32
Woerth, 6th Aug.	489	10183	—	1	16	37	3	49	23	—	2	1	4	67	61
Spicheren, 6th Aug.	—	—	—	—	6	23	3	36	51	—	1	2	3	43	76
Colombey—Trouilly, 14th Aug.	—	—	8734	—	4	14	—	17	24	—	—	—	—	21	38
*Vionville—Mars-la-Tour, 16th Aug.	720	15079	13171	32	262	930	68	920	294	4	121	382	104	1303	1606
Gravelotte—St. Privat, 18th Aug.	899	19258	24584	—	30	99	9	111	168	—	2	28	9	143	295
Buzancy, 27th Aug.	—	—	3rd Saxon Cav. Regt.	1	—	—	—	31	27	—	—	—	1	31	27
Nouart, 29th Aug.	—	—	—	—	—	2	—	—	2	—	—	1	—	—	5
Beaumont, 30th Aug.	145	3384	—	1	2	16	1	9	11	—	—	2	2	11	29
Noisseville, 31st Aug. and 1st Sept.... ...	126	2850	1 Div. and 1 Brig.	1	8	16	—	36	35	—	1	5	1	45	56
Sedan, 1st Sept.	460	8500	—	1	23	106	9	90	83	1	19	19	11	132	208
IIIrd Army ...) loss between 2nd	28	589	—	2	14	18	1	17	18	1	54	51	4	85	87
Army of the Meuse (and 19th Sept.	17	137	—	—	5	5	11	4	18	—	1	—	11	10	23
Strasburg, to 27th Sept.	39	894	4 Regts.	—	4	36	—	9	24	—	17	12	—	30	72
Metz and Diedenhofen, Aug. 19 to Oct. 27 ...	242	5571	—	3	9	14	4	23	19	—	5	10	7	37	43
IIIrd Army ... (before Paris) loss between	—	—	8528	6	55	131	11	107	147	1	123	159	18	285	437
Army of the (before Paris) and	—	—	15954	—	12	20	2	24	12	—	3	2	2	39	34
Meuse ... (elsewhere) 31st Oct.	—	—	4513	20	167	472	36	385	477	7	240	223	63	792	1172
IInd Army loss between 1st Nov., 1870, and 3rd Jan., 1871	—	—	4397	7	81	217	17	158	186	4	144	176	28	383	579
Ist Army loss between 12th Oct., 1870, and 31st Jan., 1871	—	—	—	—	14	39	5	40	54	1	22	34	6	76	127
IIIrd and Meuse Armies, 1st Nov., 1870, to 31st Jan., 1871	—	—	—	1	16	41	5	38	34	1	29	14	7	83	89
Before Belfort and smaller Fortresses ...	—	—	—	3	105	171	6	172	135	5	157	194	14	434	500
†Miscellaneous actions, after 1st Nov., 1870...	—	—	—	2	9	11	—	16	11	—	77	87	2	102	109
‡Engaged in rear of the German Armies ...	—	—	—												
Total loss of German Cavalry during the War				82	844	2430	192	2303	1872	25	1020	1403	299	4167	5705

* The loss of Von Bredow's Brigade was 16 officers, 363 men, and 409 horses.

† This loss was incurred principally by the Cavalry of the 2nd, 4th, 7th and 14th Corps; the 1st Bavarian Corps; the 2nd and 5th Cavalry Divisions and the 1st and 4th Reserve Divisions.

‡ Exclusive of losses incurred before Belfort and the other Fortresses.

An Aide-de-Camp to Napoleon. Memoirs of General Count de Ségur; translated by H. A. PATCHETT-MARTIN. London: Hutchinson and Co., 1895.

It is not proposed to review this book, but merely to call attention to a few most remarkable mis-translations which appear in it. Moltke's "History of the War of 1870" in its first English dress was amusing enough: few of its readers can have forgotten the delightful "Colonel commanding the Fourth Army Corps" or the pranks played with the cavalry at Vionville by the humorous translator; but even these flights of inspiration are completely put in the shade by the following little errors in Mr. Martin's translation.

On page 3 there is an account of a duel which took place by the light of a *gas* lamp erected *before* the Revolution by the Vicomte de Ségur. On page 88 the reader is informed that the Duc d'Enghien, on being surprised in his house at Ettenheim, "seized a *repeating* rifle" and took aim at the French commandant; and on page 151 there is the most startling and interesting piece of information that Napoleon was kept aware of events in Paris during the march to Ulm by the "telegraph wires"; that he had a line of semaphores for visual signalling we were aware, but we had no idea that the French were so far ahead of us in the field of scientific discovery as the above facts reveal.

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WOOLWICH, JUNE	TWO.
PROMOTION, MAY	TWELVE.
MILITIA LITERARY, APRIL	TEN.
MILITIA MILITARY COMPETITIVE, MARCH..	TWENTY-FOUR.

MILITIA MILITARY COMPETITIVE, SEPTEMBER.

6th Cavalry	F. M. Jennings	1,681
13th Infantry	H. Watkins Grubb	1,835
18th ,,	G. F. Hibbert	1,818
19th ,,	M. E. T. Gunthorpe	1,802
23rd ,,	L. N. Jones-Bateman	1,790
27th ,,	W. D. Wright	1,785
32nd ,,	J. S. Unthank	1,769
35th ,,	W. Allason	1,757
37th ,,	M. L. Formby	1,756
41st ,,	C. L. Thomas	1,752
47th ,,	R. H. M. C. Miers	1,728
Second University	W. G. H. Lawley	1,391

The total number of SUCCESSES OBTAINED in 1895 was ONE HUNDRED and TWENTY-NINE.

Among these the FIRST PLACE on the lists in the various Examinations WAS TAKEN FIVE TIMES, and THIRTY-TWO Pupils were among the first TEN in the various subjects.

SANDHURST	FORTY-FIVE.	MILITIA LITERARY	SIXTEEN.
WOOLWICH	SEVENTEEN.	MILITIA COMPETITIVE	TWENTY-EIGHT
STAFF COLLEGE ...	EIGHT.	PROMOTION	FIFTEEN.

STAFF COLLEGE, AUGUST, 1896.

The following Officers were admitted:—

Captain W. R. Robertson, D.S.O.	3rd Dragoon Guards.
Captain C. W. Thompson	7th Dragoon Guards.
Captain F. A. Molony	Royal Engineers.
Captain W. A. J. O'Meara	Royal Engineers.
Captain A. J. Murray	2nd Royal Inniskilling Fusiliers.
Captain O. S. W. Nugent, D.S.O.	1st Kings Royal Rifle Corps.
Lieutenant H. C. Holman	Indian Staff Corps.

And two others qualified, viz.:—

Brevet-Major A. G. Hunter-Weston	Royal Engineers.
Lieutenant F. R. F. Boileau	Royal Engineers.

The Details of Marks for this year are not yet known.

At the Examinations in 1892, '93, '94 and '95, FIFTY-THREE Officers went up, of whom FORTY-ONE passed into the College, the FIRST PLACE being taken on each occasion. The following list shews the number in the first ten in each subject.

*Military History—FIRST (two), 2nd (three), 3rd (two), 4th (four), 5th, 6th, 7th, 8th (two), 9th, 10th (two).

Military Administration—SECOND, 3rd and 4th.

Mathematics—FIRST (three), 2nd (three), 3rd, 4th, 5th (three), 6th (two), 8th, 9th, 10th.

Fortification—FIRST (two), 2nd (three), 4th (four), 7th, 8th, 9th, 10th.

Topography—FIRST (two), 2nd (two), 3rd (two), 5th, 8th (two), 9th (two), 10th.

Tactics—FIRST, 2nd (three), 3rd (two), 5th (three), 6th, 7th (two), 9th, 10th.

Military Law—FIRST, 2nd (three), 4th, 5th, 6th (two), 7th (two), 8th, 9th (three), 10th.

Geography—FIRST, 8th, 9th.

French—FIRST (three), 3rd, 4th, 5th, 7th (two), 9th 10th.

German—FIRST (two), 3rd (three), 6th (three), 7th, 9th (two), 10th.

Hindustani—FIRST (two), 3rd (two), 4th (two), 5th (two), 6th, 8th, 9th (two), 10th (two).

Russian—Third, 4th, 5th (two), 6th, 7th.

*In this subject the highest percentage ever obtained, also full marks in the "Special Campaign," were won by our pupils. Captain James always prepares special notes on the Campaign, the results from which are shown above.

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